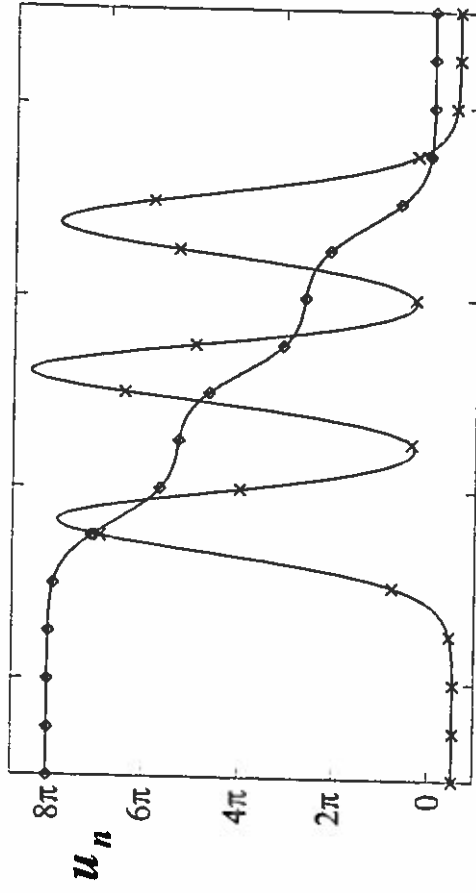


HERIOT-WATT  
UNIVERSITY  
*E d i n b u r g h*

DEPARTMENT OF MATHEMATICS



**HERIOT-WATT UNIVERSITY**  
**DEPARTMENT OF MATHEMATICS**

**ANNUAL REPORT 1997**

After a 6-year break, the Department of Mathematics at Heriot-Watt has decided to revive its practice of producing an annual report of its activities. It is a pleasure to introduce this first issue of the new series. In the period since our last annual report there have been a number of changes in the Department and the University, and it is perhaps worth recalling some of these.

The University's move to a modular degree system in the mid 1990's gave us an opportunity to reorganise, and to some extent streamline, our undergraduate teaching. We have also taken the opportunity to introduce new degree courses (such as Mathematics with Finance), and to extend the range of options available to our students.

We were pleased that our efforts in teaching and research were recognised by the ratings of Highly Satisfactory in the Teaching Quality Assessment in 1993, and a grade 5 in Applied Mathematics in the 1996 Research Assessment Exercise. The CALM group went from strength to strength, receiving a BNFL Partnership Award in 1993, and a Bank of Scotland Tercentenary Award in 1995. The launch of Interactive Past Papers in 1997, in conjunction with Lander Software, has taken them in yet another exciting new direction.

The department, through Dr Dugald Duncan and Professors Chris Eilbeck and Andrew Lacey, became involved in three Teaching Company projects, involving as industrial collaborators Edinburgh Petroleum Services and Concept Systems (the latter in collaboration with Dr Stan Zachary of the Department of Actuarial Mathematics and Statistics). This also represents a new and interesting direction for us, and we look forward to further similar developments in the future.

Professor Penrose retired during this period (but we are pleased to say remains in the department as an Emeritus Professor), while Professors Ball and van den Berg moved to Oxford and Bristol respectively. We took the opportunity to appoint some new young staff members: Drs Nick Gilbert, Kostya Khanin, and Michael Levitin all joined us before the start of 1997. During 1997, with the help and encouragement of our new Principal, Professor Archer, we made three further appointments: Professors Jonathan Sherratt and Sergei Kuksin and Dr Robert Weston, all of whom joined us in January 1998. Additionally, the award of an EC TMR Fellowship has brought Dr José Marin here for two years to work with Professor Eilbeck. Professor Mike Russell, formerly of the Rutherford Laboratories, was appointed Honorary Professor.

In 1997, several members of the department spoke at international conferences throughout the world - notably Dr Khanin who was invited to address the International Congress of Mathematical Physics in Brisbane. Members of the department were involved in organising conferences through the International Centre for Mathematical Sciences and elsewhere. Looking forward, we (in particular Professor Jack Carr and Dr Michael Levitin) are very involved in the running of ICIAM 99, the Fourth International Congress of Industrial Applied Mathematics, which will take place in Edinburgh in July 1999 with an expected 3000 participants.

J Howie, Head of Department

## STAFF

### Head Of Department

Professors

Professor J Howie

CE Beavers  
K J Brown  
J Carr  
J C Eilbeck  
R J Knops  
A A Lacey

### Professor Emeritus

O Penrose

### Honorary Professor

F M Russell

### Readers

R N Hills  
D A Johnston  
B P Rynne

### Senior Lecturers

D B Duncan  
G R McGuire  
A R Prince

### Lecturers

J Brec  
D E R Clark  
B P Dodds  
N D Gilbert  
K Khanin  
M Levitin  
L E Nicholas  
C Noble  
H U Rahman  
D G Wilkinson  
M A Youngson  
K Zhang

### Temporary Lecturers

R M Dunwell  
D G Roxburgh  
D G Wild

### Computing Officers

MG Foster  
S Mowbray

### Calin Software Production Officer

D J Fiddes

### Teaching Company Associate

K A Hutchison  
J Tracey

### Secretaries

I Fraser  
P Hampton  
S Meikle  
F Paterson

## VISITORS TO THE DEPARTMENT

The following made long-term visits:

Agranovich M S, Moscow  
Bogley W, Oregon State  
Enolskii VZ, Kiev  
Funken S A, Kiel  
Iturriago R, Mexico  
Ko Bongsoo, Cheju National University, South Korea  
Rantokokko J, Uppsala  
Srisatkunarajah, S. Jaffna

In addition short-term visits were made and seminars given by the following:

Ambjorn, J, Niels Bohr Inst. Copenhagen  
Borovik A V, UMIST  
Bowick, M, Syracuse  
Bunimovich L, Georgia Tech, Atlanta  
Cameron P J, QMW  
Carlsensen, C, Kiel  
Chiswell I M, QMW  
Conlon J, Oxford  
Coveney P, Schlumberger Cambridge  
Dancer N, Sydney  
Datta N, Strathclyde  
Davie A, Edinburgh  
Dolgopyat D, California Berkeley  
Dorey P E, Durham  
Dunwoody M J, Southampton  
Edmunds, D E, Sussex  
Glynn D, Canterbury, New Zealand  
Graham I, Bath  
Grindrod P, QuantiSci  
Herraiz L A, UCM Madrid  
Hinch E J, Cambridge  
Jakobson D, Caltech  
Kukusin S B, Steklov Institute, Moscow  
MacKay R S, Cambridge  
McIntosh A, MacQuarie, Sydney  
Moloitkov, I, Moscow  
Netrusov Yu, Sussex  
Nickel W, St Andrews  
Novikov S, Landau Institute, Moscow  
Novitskii M, Acad of Sciences, Kharkov  
Pawlow I, Warsaw  
Rapaport D, Bar-Ilan University, Israel  
Sherratt J A, Warwick  
Sinai Y G, Moscow  
Sivashinsky G I, Tel Aviv  
Skeldon A, City  
Sloan D M, Strathclyde  
Smilansky U, Weizmann Institute  
Smyshlyayev V P, Bath  
Tertikas A, Crete  
Truskinovsky L, Minnesota  
Turiisyn S, Dusseldorf

## CONFERENCES ORGANISED BY MEMBERS OF STAFF

ICMS conference "Mathematical Models of Systems Involving Phase Change, June 1997, Dr R N Hills

Scottish Computation Mathematics Symposium, University of Edinburgh, September 1997, Dr D B Duncan

Workshop on Mathematical Models in Well Testing, ICMS/Edinburgh Petroleum Services, Edinburgh, September 1997, Dr K A Hutcheson

## INVITED PAPERS AND SEMINARS GIVEN BY MEMBERS OF STAFF

Professor C E Beavers

Invited lecture, Mathematical Association, Strathclyde University, Glasgow April 1997 with Dr D G Wild

"*Interactive PastPapers - an assessment package for mathematics teachers*"

Invited lecture, Scottish Universities Mathematics and Statistics meeting, Glasgow Caledonian University, June 1997 "Assessment in the SUMSMAN project"

Invited talk - by Video to CTI Conference, Stirling University, October 1997 "Reflections on video presentations for students"

Invited lecture, International Conference on Technology and Mathematics Teaching, Chicago, November 1997 "The SUMSMAN project - cooperation in Scottish Universities"

Invited lecture, International Conference on Technology and Mathematics Teaching, Chicago, November 1997, Workshop on Assessment "Interactive assessment over the Web"

Invited talk, TALISMAN Conference Heriot-Watt University, December 1997 "Teaching by video"

Seminar, Trent College, Nottingham, March 1997 "Introduction to CALM software"

Colloquium, Edinburgh University, October 1997 "Assessment in mathematical coursework"

Professor K J Brown

Invited lecture at "Second International Conference on Differential Equations and Dynamical Systems" at University of Waterloo, Canada, August 1997 "Principal eigenvalues for problems with indefinite weight functions"

Professor J Carr

Seminar, Instituto Superior Tecnico, Lisbon, May 1997 "Solitary Waves on Lattices"

Seminar, University of Cambridge, November 1997 "The Becker-Döring equations and the Lifshitz-Slyozov theory of coarsening"

Seminar, University of Bath, December 1997 "Nonlocal partial differential equations"

Invited talk, Mathematisches Forschungsinstitut Oberwolfach, Conference on Large Time behaviour in Dynamical Systems, August 1997 "Asymptotic behaviour of nonlocal partial differential equations"

Two invited lectures at Mathematics Teaching Conference, University of Edinburgh, September 1997 "Primary mathematics masterclasses"

Invited lecture, Mathematical Association Conference, University of Strathclyde, April 1997 "Primary mathematics masterclasses"

Seminar, Liverpool University, October 1997 "An example of a metastable system"

Dr R M Dunwell

Seminar, University of Kent, November 1997 "Numerical Analysis of coagulation-fragmentation"

Seminar, Strathclyde University, April 1997 "Numerical analysis of coagulation-fragmentation"

Conference talk, BAMC Edinburgh "Numerics of scattering problems described by retarded potential integral equations"

Conference talk, Dundee Numerical Analysis Conference, June 1997 "Approximating a nonlinear integro-partial differential equation"

Professor J C Eilbeck

Seminar, Department of Mathematical Physics, University College Dublin April 1997 "Breathers in 1- and 2-D lattices"

Seminar, 33<sup>rd</sup> Inaugural Lecture, University College Dublin Mathematical Society, April 1997 "The soliton, from the Union Canal to high temperature superconductivity"

Seminar, Department of Theoretical Mechanics, University of Nottingham, April 1997, "Breathers in 1- and 2-D lattices"

Workshop on Mathematical Models in Well Testing, ICMS/Edinburgh Petroleum Services, Edinburgh, September 1997, "Computer tools for Mathematics: Maple"

Masterclass, Heriot-Watt University, October 1997 "Fractals and Chaos"

Seminar, UMIST, November 1997 "Breathers in 1D and 2D lattices"

Seminar, Durham University, November 1997 "Some numerical studies of solitons and breathers on lattices"

Invited lecture, Workshop on localization in Nonlinear Lattices, Max-Planck-Institut für Komplexer Systeme, Dresden, Germany April 1997 "Longitudinal breathers in

*1-D and 2-D lattices*"

Invited lecture, SOLPHYS conference, Lyngby, Denmark, May 1997 "Breathers in 1- and 2-D lattices"  
Invited lecture, Soliton Summer School, Dijon, France, June 1997 "Solitons and breathers in classical lattices and breathers in quantum lattices"

Dr N D Gilbert

Seminar, University of Durham, October 1997 "R J Thompson's absolutely interesting group"  
Seminar, Edinburgh and Heriot-Watt Universities Algebra seminar, October 1997 "Monoid presentations and associated groupoids"

Dr R N Hills

Lecture Course at ICMS meeting "Mathematical Models of Systems Involving Phase Change" June 1997  
"Thermodynamics Foundations of Mixed Phase Regions"

Professor J Howie

Seminar, University of Warwick, January 1997 "Free subgroups in groups of small deficiency"  
Seminar, University of Aberdeen, February 1997 "Free subgroups in groups of small deficiency"  
Seminar, University of Leeds, October 1997 "Bestvina-Brady groups and the plus construction"  
Seminar, University of Liverpool, November 1997, "Bestvina-Brady groups and the plus construction"  
Invited lecture, "Isle of Thorns conference on low-dimensional topology, Sussex" April 1997 "Growth and Euler characteristics"  
Contributed talk, British Mathematical Colloquium, Royal Holloway, April 1997 "Free subgroups in groups of small deficiency"  
Invited lecture, "Special Session on Topology", Canadian Mathematical Society meeting, Winnipeg, June 1997 "Free subgroups in groups of small deficiency"

Dr K A Hutcheson

Seminar, University of Leeds, February 1997 "Well test analysis in reservoir engineering"  
Seminar, Heriot-Watt University, May 1997 "Pressure transient analysis in reservoir engineering"

Dr D A Johnston

Seminar, University of Heidelberg, May 1997 "Gonihedric Ising Modes"  
Seminar, NCSR "Demokritos", Athens, June 1997 "Gonihedric Ising Modes"  
Invited talk, Santa Fe "Quantum Gravity" workshop, August 1997 "Spin models on thin graphs"

Dr K Khanin

Seminar, Cambridge University, "Burgers equation and random Aubry-Mather theory"

Seminar, Loughborough University, "Hyperbolic dynamics and random Burgers equation"  
Seminar, University of Wales, Swansea, "Burgers equation and random Aubry-Mather theory"  
Seminar, North British Probability Seminar, "Burgers equation and stochastic flows of diffeomorphisms"  
Invited talk, Conference on Statistical Mechanics, Imperial College London, June 1997, "Random Aubry-Mather theory"  
Invited talk, International Congress in Mathematical Physics, Brisbane, Australia, July 1997, "Random Burgers equation"  
Invited talk, International conference on Dynamical Systems, Rio de Janeiro, Brazil, August 1997 "Burgers equation and random Lagrangian systems"

Professor R J Knops

Invited Lecture, "Giornata Lincea de Saint-Venant", Accademia Lincei Rome, March 1997 "Spatial stability in thick elastic plates"  
Contributed talk, Saint-Venant Symposium, Paris, August 1997 "The effect of a variation in the moduli and geometry on Saint-Venant's principle"  
Contributed talk, International Conference on Waves and Stability in Continuous Media, Bari, October 1997 "Spatial stability in the free incompressible elastic half-strip"

Professor A A Lacey

Seminar, University of Dundee, October 1997 "Blow-up for nonlocal diffusion problems"  
Seminar, University of Strathclyde, November 1997 "Blow-up for nonlocal diffusion problems"  
Seminar, Technical University of Athens, December 1997 "Blow-up for nonlocal diffusion problems"  
Invited talk at "Conference on Dynamics of Mixed Phase Regions", ICMS June 1997 "Some macroscopic models for melting from averaging microstructure"  
Invited talk at "Conference on Mathematical Methods in Well Testing", ICMS September 1997 "Analytic solutions for multi-laterals"

Dr M Levitin

Seminar, Bristol University, January 1997 "Fourier Tauberian theorems"  
Seminar, Technion (Israel Institute of Technology), November 1997 "On the principal eigenvalue of the spectral problem with a parameter in the boundary condition"  
Seminar, Tel-Aviv University, Israel, November 1997 "Vibration of shells containing fluid: rigorous asymptotic analysis"  
Seminar, Weizmann Institute of Sciences, Israel, November

1997 "Spectral asymptotics for domain with fractal boundary"  
 Lecture at "One-day workshop on Trapped Modes", University of Sussex April 1997 "The principal eigenvalue of the Robin problem with big parameter"  
 Lecture at "Euromech Symposium on Fluid-Structure Interaction in Acoustics", The Hague, Holland, September 1997 "Vibration of shells containing fluid: rigorous asymptotic analysis"  
 Invited lecture at "Workshop on Differential Equations, Spectral Theory, Function Spaces", Jena, Germany, October 1997 "PDEs and fractals"  
 Talk at "CALM-AIM Meeting" Trent College, Nottingham, March 1997 "CALM unit structure"  
 Invited talk with Dr D G Wild at Meeting of Principal Teachers of Mathematics of Fife Council, Auchterderran, May 1997 "Higher CALM units and Interactive PastPapers"  
 Invited lecture with Dr D G Wild at "Scottish Mathematical Council Conference", Stirling, April 1997 "Computer Aided Learning in Mathematics"  
 Seminar, University of Southampton, February 1997 "Phase-field modelling of diffusion-induced grain boundary motion"  
 Seminar, Rutgers University, USA, March 1997 "Asymptotic behaviour of the Lifshitz-Slyozov model of coarsening"  
 Seminar, Rutgers University, USA, April 1997 "Does off-diagonal long-range order help to explain superconductivity?"  
 Talk, Caledonian workshop on "Finite Geometries, Glasgow Caledonian University, November 1997 "The cyclic parallelisms of PG(3,5)"  
 Talk, BAMC 97, Edinburgh University, April 1997 "Waves in an elastic layer subjected to restricted shear"  
 Seminar, Glasgow University, May 1997 "Bifurcation from zero and infinity in non-linear Sturm-Liouville problems which are not linearizable"  
 Lecture, conference York University, "Number theory and dynamical systems, September 1997 "The Hausdorff dimension of sets arising from simultaneous Diophantine approximation with different error terms in each inequality"

Dr G R McGuire

Professor O Penrose

Dr A R Prince

Dr D G Roxburgh

Dr B P Rynne

Dr D G Wild

Invited lecture, Mathematical Association, Strathclyde University, Glasgow April 1997 with Professor C E Beavers "Interactive PastPapers - an assessment package for mathematics teachers"  
 Seminar, Liverpool John Moores University, November 1997 "Interactive PastPapers and online assessment"  
 Invited talk with Dr G R McGuire at Meeting of Principal Teachers of Mathematics of Fife Council, Auchterderran, May 1997 "Higher CALM units and Interactive PastPapers"  
 Invited lecture with Dr G R McGuire at "Scottish Mathematical Council Conference", Stirling, April 1997 "Computer Aided Learning in Mathematics"

#### RESEARCH AND OTHER GRANTS AND MISCELLANEOUS INCOME REPORTED IN 1997

£82000	Teaching Company Scheme with Concept Systems Ltd awarded to Dr D B Duncan, Professor J C Eilbeck and Dr S Zachary*
£82000	*Department of Actuarial Mathematics and Statistics, Heriot-Watt Teaching Company Scheme with Edinburgh Petroleum Services Ltd awarded to Dr D B Duncan, Professor J C Eilbeck and Professor A A Lacey for work on pressure waves in oil-well pipes
£62168	From the EC Training and Mobility of Researchers Programme awarded to Professor J C Eilbeck for visiting fellow Dr J L Marin
£40750	From EPSRC for workshop "Mathematical Models of Systems Involving Phase Change", June 1997, awarded to Dr R N Hills
£25000	From EPSRC for CGAMA98, ICMS workshop on "Computational and geometric aspects of modern algebra", awarded to Dr N D Gilbert and Professor J Howie
£11750	From The Leverhulme Trust, support for travel and research, awarded to Dr K Khanin
£9000	From SHEFC to create mathematical assessment using MATHWISE template, under the direction of Professor C E Beavers
£7450	From The British Council/DAAD collaboration grant to work on electromagnetic scattering with group in Kiel awarded to Dr D B Duncan, Dr B P Rynne and Dr P J Davies (University of Strathclyde)
£6783	From EPSRC to support a Visiting Fellowship for Professor W Bogley for research on "Cockcroft properties of non-hopfian groups", awarded to Dr N D Gilbert
£4500	Royalties from sale of CALM software, under the direction of Professor C E Beavers
£1500	From EUFC for travel awarded to Professor C E Beavers
£900	From the Royal Society, support for visit by Dr R Iurrigo, Mexico, awarded to Dr K Khanin
£800	From the London Mathematical Society, support for visit of Professor I A

**THESES SUCCESSFULLY PRESENTED FOR HIGHER DEGREES**

G A Afrouzi (PhD)	"Some problems in elliptic equations involving indefinite weight functions"
R M Dunwell (PhD)	"The Becker-Döring cluster equations"
R P K C Malmimi (PhD)	"Gonihedric 3D Ising models"
C Nikolopoulos (PhD)	"Mathematical Modelling of Modulated-Temperature Differential Scanning Calorimetry"
A R Soheili (PhD)	"Numerical analysis of coagulation-fragmentation equations"
J R Taylor (PhD)	"Numerical analysis of fast and slow transients in gas transmission networks"
<b>MSc in Mathematics of Nonlinear Models - joint with the University of Edinburgh</b>	
Mr A J Adam:	"The effect of noise on a deterministic model of a chemical reaction scheme"
Mr M A Gray:	"Numerical approximation of pressure transients in oil reservoirs"
Mr G J D Petrie:	"Windscreen heating"
Mr B T Tope:	"Implied volatilities between caps and swaptions"
Mr D C Vicary:	"Gravothermal oscillations in globular star clusters"
Mr A J Waugh:	"A model of council house allocation"

£800	Molotkov, Moscow, November 1997, awarded to Professor A A Lacey from the Royal Society of Edinburgh for Primary Mathematics Masterclasses, awarded to Professor J Carr
£800	From the Royal Society, support for travel to Rio De Janeiro, August 1997, awarded to Dr K Khanin
£775	From The London Mathematical Society for The Scottish Computational Mathematics Symposium, September 1997, awarded to Dr D B Duncan
£600	From The British Council, support to visit Professor G Savvidy, NCSR, Athens, May 1997, awarded to Dr D A Johnston
£500	From the Edinburgh Mathematical Society Centenary Fund, support for visit of Professor I A Molotkov, Moscow, November 1997, awarded to Professor I A Lacey
£500	From The London Mathematical Society for North British Differential Equations Seminar (Professor Kriegsmann) awarded to Dr D B Duncan
£468	From The Royal Society, support for travel to Santa Fe Workshop, July 1997, awarded to Dr D A Johnston
£340	From INTAS co-operation programme grant (organiser F W Nijhof, Leeds) awarded to Professor J C Eilbeck
£300	From The London Mathematical Society, support for travel to attend Euromech Symposium, The Hague, September 1997 awarded to Dr M Levitin
£300	From The Edinburgh Mathematical Society Centenary Fund, support for visit by Professor M Bowick, Syracuse University, May 1997, awarded to Dr D A Johnston

## Publications

- Baig M, Espriu D, Johnston D A, Malmimi R  
String Tension in Gonihectic 3D Ising Models  
*Journal of Physics A* Vol 30 pp 7695-7706 1997
- Baig M, Espriu D, Johnston D A, Malmimi R P K C  
Evidence for a first order transition in a plaquette three-dimensional Ising-like action  
*Journal of Physics A* Vol 30 pp 405-412 1997
- Baillie C, Janke W, Johnston D A  
Softening phase transitions with quenched 2d gravity  
*Nuclear Physics B (Proceedings Supplement)* Vol 53 pp 732-734 1997
- Bari R, Rynne B P  
The structure of Rabinowitz' global bifurcating continua for problems with small nonlinearities  
*Mathematika* Vol 44 pp 419-433 1997
- Beevers C E, Wild D G, Fiddes D J  
Assessment in mathematical coursework  
*Proc Ninth Annual International Conference on Technology and Collegiate Mathematics, Reno, Conference Proceedings* pp 528-532 1997
- Bialas P, Burda Z, Johnston D A  
Condensation in the Backgammon Model  
*Nuclear Physics B* Vol 493 pp 505-516 1997
- Brodskii S D, Howie J  
The universal torsion-free image of a group  
*Israel J. Math.* Vol 98 pp 209-228 1997
- Cahn J W, Fife P, Penrose O  
A phase-field model for diffusion-induced grain-boundary motion  
*Acta Mater.* Vol 45 pp 4397-4413 1997
- Cirillo E, Gonella G, Pelizzola A, Johnston D A  
The phase diagram of the 3D gonihectic Ising model via CVM  
*Physics Letters A* Vol 226 pp 59-64 1997
- Eilbeck J C, Lopez-Gomez J  
On the periodic Lotka-Volterra competition model  
*J. Math. Analysis and Applications* Vol 210 pp 58-87 1997
- Hamson M, Nicholas L E  
There's safety in numbers  
*Mathematics Today* Vol 33 pp 181-182 1997
- Hills R N, Roberts P H  
Microstructural coarsening kinetics for a mushy zone of a pure material  
*International Journal of Non-Linear Mechanics* Vol 32, No 5 pp 1003-1013 1997
- Johnston D A  
Gravity and random surfaces - a review  
*Nuclear Physics B (Proceedings Supplement)* Vol 53 pp 43-55 1997
- Johnston D A, Malmimi R P K C  
Gonihectic 3D Ising models  
*Nuclear Physics B (Proceedings Supplement)* Vol 53 pp 773-776 1997
- Johnston D A, Plechac P  
Potts Models on Feynman Diagrams  
*Journal of Physics A* Vol 30 pp 7349-7363 1997
- Jones K J, Kinshott I, Reading M, Lacey A A, Nikolopoulos C, Pollock H M  
The Origin and Interpretation of the Signals of MTDSC  
*Thermochimica Acta* Vol 304/305 pp 187-200 1997
- Khanin, K  
Rigidity for circle homeomorphisms with a break-type singularity  
*Doklady Mathematics* Vol 56 pp 859-861 1997
- Khanin K, Sinai Y  
Hyperbolicity of Minimizing Trajectories for Two-Dimensional Hamiltonian Systems with Random Forcing  
*In: Dynamical Systems and Related Topics: Collection of articles (for the 60th anniversary of D V Anosov), Proc. V A Steklov Inst Math* Vol 216 pp 169-174 1997
- E W, Khanin K, Mazel A, Sinai Y G  
PDF's for the Random Forced Burgers Equation  
*Physical Review Letters* Vol 78 1997
- Knops R J, Lupoli C  
End effects for plane Stokes flow along a semi-infinite strip  
*Zeitschrift für Angewandte Mathematik und Physik* Vol 48 pp 905-920 1997



- Knops R J  
The effect of a variation in the geometry and moduli on Saint-Venant's principle  
*Presse E N de Pontis et Chaussees, Paris 1997 Conference Proceedings* pp 439-445 1997
- Lacey A A Nikolopoulos Reading M  
A Mathematical Model for Modulated Differential Scanning Calorimetry  
*Journal of Thermal Analysis Vol 50* pp 279-333 1997
- Lacey A A Bebernes J W  
Global existence and finite-time blow-up for a class of nonlocal parabolic problems  
*Adv. Diff. Eqns., Vol 2, pp 927-953* 1997
- Levitin M  
"Fourier Tauberian theorems"  
in "The Asymptotic Distribution of Eigenvalues of Partial Differential Operators" by Yu Safarov and D Vassiliev  
*AMS Series Translations of Mathematical Monographs*, AMS Providence, RI Vol 155 pp 297-305 1997
- Little G Tuttle JR Clark D E R C Comey J R  
The Heriot-Watt Feature Finder: a Graph-based Approach to Recognition  
*Proc. 1997 ASME Conference Sacramento, USA, pp14-2* 1997
- McGuire G R Wild D G Fiddes D J Beevers C E  
Youngson M A  
Interactive PastPapers in Mathematics - A-Level and Scottish Higher  
*Lander Software - Creative Software for Education - Glasgow* 1997
- Mahal B Clark D E R Simmons J E L  
Advances in Virtual Environments: A Survey  
*Journal of Teleoperators and Virtual Environments, MIT* 1997
- Penrose O Fraizl P  
Competing mechanisms for precipitate coarsening in phase separation with vacancy dynamics  
*Physical Review B Vol 55 pp R6101-R6104* 1997
- Penrose O  
The Becker Döring equations at large times and their connection with the LSW theory of coarsening  
*J. Stat. Phys. Vol 89 pp 305-320* 1997
- Penrose O  
The Wiener programme in statistical physics: is it feasible in the light of recent developments?  
*AMS Proc. Symp. Appl Math Vol 52 pp 37-5* 1997
- Prince A R  
Uniform Parallelisms of PG(3,3)  
*Geometry, Combinatorial Designs and Related Structures (eds J.W.P.Hirschfeld, S.S.Magliveras, M.J.de Resmini) LMS Lecture Notes 245, Cambridge University Press Vol pp 193-200* 1997
- Prince A R  
A complete classification of the flag-transitive affine planes of order 125  
*Journal of Combinatorial Designs Vol 5 pp 147-153* 1997
- Prince A R  
Oval configurations of involutions in symmetric groups  
*Discrete Mathematics (Combinatorics '94 volume) Vol 174 pp 277-282* 1997
- Prince A R  
Parallelisms of PG(3,3) invariant under a collineation of order 5  
"Mostly Finite Geometries" (ed. N.L.Johnson), *Lecture notes in pure and applied mathematics Vol 190* pp 383-390 1997
- Roxburgh D G  
Electromagnetic scattering from right-circular cylinders using a surface radiation condition  
*IMA J Appl Math, 59, pp 221-230* 1997
- Roxburgh D G, Rogerson G A  
Small amplitude vibrations of an internally constrained elastic layer  
*J Sound Vibration, 211 pp227-247* 1997
- Russell F M Zolotaryuk Y Eilbeck J C Dauxois T  
Moving breathers in a chain of magnetic pendulums  
*Phys. Review B Vol 55, pp 6304-6309* 1997
- Rynne B P  
Bifurcation from infinity in nonlinear Sturm-Liouville problems with different linearizations at  $u = \pm\infty$   
*Applicable Analysis Vol 67 pp 233-244, 1997*
- Seed G M Clark D E R Comey J R  
Geometric Feature Recognition Helps Manufacture  
*Journal of Scottish Software, 26 pp 26-28* 1997
- Tuttle JR Little G Comey JR Clark D E R  
Feature Recognition for NC Part Programming  
*Computers in Industry Journal, 8 pp40-51* 1997
- Zolotaryuk Y Eilbeck J C Savin A  
Bound states of lattice solitons and their bifurcations  
*Physica D Vol 108 pp 81-91* 1997

- Zhang K  
Instability of the Dirichlet problem for Hamilton-Jacobi equation  
*Bulletin of the Australian Mathematical Society*, 55 pp 311-319 1997
- Zhang K  
Stability of the elastic energy in star-shaped domains  
*Quarterly Journal of Mechanics and Applied Mathematics*, 50 pp 427-433  
1997
- Zizak I Frazl P Penrose O  
Dissolution of precipitates heated above the solubility line : a Monte Carlo  
simulation. I  
*Phys Rev B Vol 55* pp 12121-12127 1997

Copies of the above reports or reprints can be obtained by writing to the authors or to:

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