DEPARTMENT OF MATHEMATICS

ANNUAL REPORT 2001

PREAMBLE

The Department of Mathematics comprises over 70 established and temporary academic staff, based on two sites (the City campus and Tamaki campus). With the number of its equivalent full−time students totalling approximately 980 in 2001 the Department is one of the largest at the University of Auckland, offering courses at all levels for students in several Faculties.

The Department has a sub−unit which operates with a degree of autonomy: the Mathematics Education Unit. During 2001 discussion took place regarding the reestablishment of the Applied and Computational Mathematics Unit and this has been agreed to: the outstanding decisions are the name and who is to head the Unit. Also staff have been actively involved in the Acoustics Research Centre, the Centre for Discrete Mathematics and Theoretical Computer Science, and the Mathematical Biology Research Unit. Nationally, several members of the Department are heavily involved in the New Zealand Mathematics Research Institute. The Department has particular research strengths in many different areas of mathematics including algebra, combinatorics, complex analysis (one and several variables), differential equations and mathematical modelling, functional analysis and operator theory, history of mathematics, mathematics education, numerical analysis, topology and geometry. The department is the strongest Mathematics Department nationally, publishing almost as much research in the last five years as all other Mathematics Departments in New Zealand combined (Mathematical Reviews Citation).

Highlights for the Department in 2001 include the award of a James Cook fellowship to Professor Gaven Martin, Fulbright awards to two of our senior students Irine Peng and Caroline Yoon, the award of New Zealand Science and Technology Postdoctoral Fellowships to three recent PhD graduates of the Department, viz Drs Alona Ben−Tal, Andrei Korobeinikov and Kerry Richardson, and the award of a Postdoctoral Fellowship by the Japan Society for the Promotion of Science to Dr Kerry Richardson. It is worth noting that the three Science and Technology Postdoctoral Fellowships were awarded in the second round of 2001 and represented over one quarter of all awards made in that round. In addition, Dr William Barton was promoted to Associate Professor. Many of our staff were invited to present plenary addresses at major international conferences. We successfully organized and ran several international conferences.

At the end of the year Dr Wayne Walker retired on health grounds. Dr Walker, who completed his undergraduate studies in the Department, joined the Department as a lecturer in 1971 on completion of his PhD degree at the University of Illinois. As well as making major contributions to teaching in the Department, including the development of new courses, Dr Walker carved out a name for himself through his research in the general area of differential equations. Recent notable work included the calculation of Fourier coefficients via sampling and applications to the prediction of epidemics.

I. DEVELOPMENTS IN TEACHING

The Department of Mathematics provides teaching in papers for students in several faculties, notably Arts, Business & Economics, Engineering and Science.

For the 2001 academic year, student numbers totaled approximately 980 equivalent full−time students (EFTS), including 920 undergraduate EFTS (800 on the City campus and 100 at Tamaki), and just under 60 postgraduate EFTS. These numbers have crept up slightly in the last few years, following considerable increases in earlier years, and it is particularly pleasing that the significant growth in our postgraduate enrolments over recent years has been maintained. We anticipate approximately a similar number of EFTS in 2002. Numbers at Tamaki have fallen. Now that a clear plan for the future development of Tamaki is being prepared, the Department can at last formulate its own plans for its contributions to the Campus. In particular we have joined with the Departments of Engineering Science and Statistics to try to revive the Industrial Mathematics programme following the failure to appoint a new professor of Industrial Mathematics.

This year the Department was involved in the teaching of the new courses PHYSICS 111 and 112

with the Physics Department. These are the first two of a series of three special courses in mathematics for students in the experimental sciences. Though I have misgivings about duplication of courses, these courses do have an especially experimental flavour so may be justified on that ground.

Another innovation in 2001 was the new course entitled Mathematics Acceleration and Extension for High School Students. This is aimed at students who wish to be challenged in Year 13. It covers the syllabi of MATHS 151 and 152 with lectures and a tutorial one evening a week throughout the year. A big advantage of this course is that it enables the students to get credit for a University course taken while still at High School. It is not clear how this course fits in with the courses Advanced Mathematics 1 and 2 taken by the best entering students as Advanced Mathematics 1 is restricted against MATHS 151 and 152.

The Department is now offering a course in another institution, viz MATHS 101 at Manukau Institute of Technology. It is very pleasing to note that the pass rate for the Manukau students was extremely high, with few withdrawals.

A number of changes took place in the Wellesley Programme. Previously only mature students were admitted to the Programme but this year school leavers whose Bursary marks were disappointing were also admitted. Also a number of Pasifika students who had taken part in the Malaga programme were admitted. This resulted in a significant increase in the number of students enrolled, from under 100 to over 150, and required an increase in the number of streams offered and staff involved. While it is good to cater for those extra students, there was a down side: the personal contact between tutors and students was more difficult to develop and as a result a number of students drifted from the Programme without the tutors as aware as in the past. The significant number of immediate school leavers also changed the class dynamics as a number of these students lacked the same motivation as the more mature students. One pleasing outcome was the overall success of the increased numbers of Pasifika students.

Last year in his Annual Report Professor Martin blamed inadequacy of resources for our inability to meet the learning needs of a large number of our students (in terms of tutorial assistance and computer laboratories). He noted that the problem is two−fold: our facilities are over−crowded and cannot be made available to all students in need; we require sufficient, appropriately trained, staff. The former of these problems is being addressed by the long−overdue construction of a tower block in place of the AURA II laboratory. Whether this Department will benefit much, or at all, remains to be seen as it is not clear what space the Department may hope to gain from this exercise. The latter Professor Martin addressed by redirecting funds from senior, permanent positions to tutorial appointments. As he noted that could not be sustained and I agree with him strongly. Over the past three years or so there have been seven departures from the permanent staff, including three professors and one associate professor, with no replacements. Given that the Department has never been generously staffed and stands out in the Faculty of Science as one of the Departments with a very low ratio of senior staff, this situation clearly needs redress. Thus approval by the Dean for the advertisement of a chair in applied mathematics as well as an associate professorship and a lectureship is most welcome and consideration of applicants for these positions is at an advanced stage. However, we must ensure that this does not result in a reduction in our ability to improve our tutorial assistance. The majority of the undergraduate students in the Department receive most of their mathematics learning in large tiered lecture theatres, contrary to the findings of educational research which shows that smaller class size improves educational outcomes. The Department has one of the lowest pass rates in the University. These issues have been pointed out in both reviews of the Department, in 1987 and 1998. The Department has made attempts to rectify the situation but there is a limit to what it can do within its meagre resources.

The very useful and efficient computer−based system for processing examination results (enabling cross−comparisons and monitoring of pass rates and so forth) developed by Dr David McIntyre continues to be upgraded by him. This system is constantly being refined and is a wonderful assessment tool. Hopefully the University's new electronic processing system will be even better! As noted by Professor Martin last year, some better way needs to be found to deal with requests for the copying of examination scripts. The Department deals with nearly 1000 such requests each year, representing approximately $2000 simply in paper and photocopying charges which must be borne by the Department. In addition about 100 hours of already scarce secretarial time as well as postage costs have to be borne by the Department.

Cyclic reviews of the courses we offer slowed down over the past couple of years. The process is now back on track with the appointment of a new Teaching Coordinator, Dr Paul Hafner. He and his team are currently reviewing the stage 3 courses, which are in need of review for a range of reasons. One

particular group to be given attention is the stronger students. For this group we reintroduced the course MATHS 230 (Advanced Mathematics 2) this year. We aim to offer a smooth stream of courses for these students leading to the graduate level as part of our move to boost graduate numbers.

There was also a review of the courses MATHS 108 and 208, which we teach (jointly with staff from the Department of Management Science and Information Systems in the case of 208) as service courses for the Faculty of Business and Economics. This review involved members of this Department as well as members of the Faculty of Business and Economics. Essentially the review confirmed that the current syllabi are suitable, with minor changes. It also recommended a new Stage III follow−up course. The Department values the contributions made by that Faculty both to the review and the teaching.

Summer Session: The Department offered three courses in the Summer Session. MATHS 208 continues to grow, with the enrolment over 300, and if it grows much more we will have to give thought to a second lecture stream. Our original summer course, MATHS 108, continues to attract plenty of students. This year we introduced a third course, the more introductory MATHS 102. Although the main reason for introducing this paper pertained to EO matters (see further comments in Section IV below) this is also a valuable addition to our offerings.

Tutorial Help: Close scrutiny continues to be given to three of the most important interfaces with students, namely tutorials, the Department's Assistance Room, and the marking of assignments. Following a review of the last two of these it was decided to introduce small group tutorials into all of our Stage I Pure Mathematics courses: both reviews of the Department have encouraged this. There are many practical problems in trying to arrange tutorials. The staffing issue can be addressed through the Faculty of Science when it is setting its budget. Much harder to address is the inadequacy of suitable tutorial rooms. In the event we have held small group tutorials all over the University. This is less than satisfactory with students having to hunt all over the institution, in frequently obscure locations. Even worse is that priority booking of these rooms for tutorials is not possible so we may even find that students are enrolled in a tutorial at a time when no room is available. Applied Mathematics is better served in this respect because we have our own computer laboratories under our own control (jointly with the Department of Statistics). We look forward to the day when sufficiently many tutorial rooms are established in the space vacated by the Science Library and the new extension to this building to allow us and our sister Departments to teach properly.

The operation of the Assistance Room and the marking of assignments has improved following the review. We now believe that our standards are more consistent. Tutors and markers involved are given appropriate training and support through workshops offered by the Centre for Professional Development and guidebooks produced by the Department.

II. OTHER STUDENT MATTERS

Scholarships and Prizes

Senior Scholarship in Applied Mathematics	Amy Cheng
Senior Scholarship in Mathematics	Michael Downward
Annual Prize in Applied Mathematics	Brendan Kayes
Annual Prize in Pure Mathematics	Richard Vale
Collins Prize in Mathematics	Brendan Kayes
Margaret Morton Prize	Caroline Yoon
Mathematics Education Prize	Rebecca Somerville

Summer Scholarships

About 25 students were engaged in research projects over the summer 2001−2, with scholarship support from the Department and the Faculty of Science. Some took part in the Mathematics Summer Workshop in Mathematical Statistics in January 2002, while others assisted staff with computational or practical aspects of individual research projects, or in the preparation of papers and other resource materials. This programme of summer scholarships has proved invaluable to both students and staff and we hope to continue to be able to offer it in the future.

Aldis Scholarships
As part of its attempt to improve the recruitment and retention of Maori and Pasifika students, the Department introduced scholarships in honour of the second professor of Mathematics of Auckland University College, William Steadman Aldis, who was an outspoken supporter of equal opportunities in Auckland in the 1880s and 1890s. These scholarships are awarded to students who have just completed high school and enrol in MATHS 102 over the summer. More details about these appear in Section IV.

Student/Staff Liaison Committee
The Student/Staff Liaison Committee continues to be chaired ably by Greg Oates. It met four times during the year, providing a successful means of two−way communication between students and staff in the Department on matters of common concern such as course and degree structures, and more general issues such as tutorial facilities and course assessment.

III. EEO & EEdO

The Department of Mathematics and its staff take their obligations to principles of Equal Employment Opportunity (EEO) and Equal Educational Opportunity (EedO) seriously. Over recent decades the actions taken and decisions made by the Department have been with concern for the spirit of EEO and EEdO, and often initiatives have been taken specifically to deal with EEO and EEdO issues. In Section IV we indicate some of our Maori and Pasifika initiatives.

Recognising the disadvantages experienced by students of Chinese origins when they come to New Zealand and have to cope with a new culture and a new language as well as their studies we established tutorials given by tutors fluent in Mandarin and Cantonese. It is not our intention to conduct the tutorials in those languages; rather the tutor is able to resort to the appropriate language when necessary to explain a term, such as relating the term in English to the equivalent term in Mandarin.

The Department has few female members of the permanent staff: one full−time and a second who has a 50% appointment with each of the Departments of Mathematics and Statistics. This is regrettable but unfortunately is hard to rectify quickly. Advertisements late in the year for three positions in the Department resulted in many applications but the proportion of female applicants was very low: fewer than 10% of the applicants were female, with nearly all of those being applicants for the lectureship rather than the associate professorship and chair.

The Department continues to run courses at foundation levels to meet the needs of students whose background in mathematics is weak. These include the Wellesley Programme and the courses MATHS 101 and 102.

Staff from the Department continue to make visits to schools to encourage students into mathematics, particularly students from under−represented groups. Also many EEdO issues have been discussed in our courses in Mathematics Education.

In addition to running courses for students without much background in mathematics, the Department offers advanced courses for more able or more qualified students, to meet their needs. In particular one accelerated course for such students was reintroduced this year following an attempt previously to reduce the number of courses offered by us resulted in its removal. The review of Stage III courses referred to above is also addressing what should be done for such students.

Further details may be found in the Appendix, which follows the Faculty's template for EO issues.

1. TREATY OF WAITANGI

The Department takes seriously its Treaty obligations. Along with the Department of Statistics, with whom we cooperate closely, we are probably at the forefront in the Faculty with respect to initiatives.

In 2001 we introduced a number of new initiatives to complement what has been reported on previously.

- Right at the beginning of the year we introduced our Aldis scholarships. These are available to Maori and Pasifika students from decile 1 and 2 schools. The initial aim was to award one scholarship to one each of Maori and Pasifika students from each of the schools. We encouraged teachers to nominate their mathematically best students. In the event only 8 scholarships were awarded and these were all awarded to Pasifika students. For 2002 we are more aggressive about these and aim to increase both the number of scholarships and the awards to Maori students. Aldis scholars enrolled in MATHS 102 during the Summer Session. All 8 students passed the course, with 5 A grades, 2 B grades and the other a C+. Unfortunately not all qualified to enter University from their 2000 Bursary examinations so in the end only 4 continued on as regular University of Auckland students in 2001. Two of the others enrolled in the Wellesley Programme and, through that, qualified for entry into University in 2002: we believe that without the Aldis scholarship these students would not have come to the University at all. A seventh enrolled in the Auckland University of Technology while the eighth moved to Australia.
- An orientation programme was established to ease new students into the University. Students met in small groups and were given a tour of the University to help them understand how the system works, to show them where to find important places (lecture rooms, the Student Resource Centre, where to hand in assignments, etc). This also enabled students to get to know some of their fellow students before the hectic beginning of classes.
- Tutorials have been offered in the Maori and Pasifika Room as well as, in the case of Maori students, individual tutorials given by our Maori tutor.
- Each first year student was assigned a mentor. The mentor was a senior student with a similar ethnic background who had passed the same Mathematics paper as the student was enrolled in. Mentors were assigned at most 10 students and were expected to meet each of their students at least fortnightly. Mentors helped their students adjust to University as well as offering tutorial help. They followed up on students who did not attend their fortnightly meeting. As well as attending two training sessions, mentors met regularly with the Maori and Pasifika coordinators.

V. RESEARCH

1. GENERAL/HIGHLIGHTS

The Department of Mathematics has a very strong research programme, with several of its staff among the world leaders in their fields, and attracts a large number of visitors each year as well as an increasing number of postgraduate students and significant research awards and funding. We continue to receive many invitations to present plenary lectures at international conferences. Five successful grant applications involving nine staff as principal or associate investigators were made to the Marsden Fund.

The Mathematics Education Unit continued to receive research grants from various sources, including the Royal Society of New Zealand and the Woolf Fisher Research Centre which made grants to support the Mathematics Enhancement Project, the ASIA 2000 Foundation and the Commonwealth Science Council.

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(e) Reviews and Comments

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DIKSHIT, G.D.: L.M. Tripathi, V.N. Tripathi and S.B. Pandey, *On the degree of approximation to a function by triangular matrix of its Legendre series*, Review in *Zentralblatt fur Mathematik*

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(f) Technical Reports

DRUMMOND, A.[5], NICHOLLS, G.K., RODRIGO, A.G.[2], and SOLOMON, W. , 'Estimating mutation rate, population history, substitution model and genealogy simultaneously from temporally spaced sequence data'.

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460: A collection of restricted three−body test problems , by Philip Sharp
461: On consistent social choice functions , by Semih Koray and Arkadii Slinko
462: Signed frames and Hadamard products of Gram Matrices , by Irine Peng and Shayne Waldron
463: Lemniscates and the Spectrumof the Perturbed, by V. L. Oleinik and A. P. Kalupin
464: Halin's Theorem for Cubic Graphs on an Annulus , by Dan Archdeacon, C. Paul Bonnington and Jozef Siran
465: Trading crossings for handles and crosscaps , by Dan Archdeacon, C. Paul Bonnington and Jozef Siran
466: The Journey of the Four Colour Theorem Through Time , by Andreea S. Calude
467: Metrisability of Manifolds in Terms of Function Spaces , by David Gauld and Frederic Mynard
468: Long initial value test problems from simulations of the Solar System , by P.W. Sharp
469: The error growth of some symplectic explicit Runge−Kutta Nystrom methods on long N−body simulations , by P. W. Sharp, R. Vaillancourt
470: Obstructions for Embedding Cubic Graphs on the Spindle Surface , by Dan Archdeacon and C. Paul Bonnington
471: On the orientable genus of the cartesian product of a complete regular tripartite graph with a even cycle, by C Paul Bonnington and Tomaz Pisanski
472: Graphs Embedded in the Plane with Finitely Many Accumulation Points , by C. Paul Bonnington and R. Bruce Richter
473: Halin's Theorem for the M"obius Strip , by Dan Archdeacon, C. Paul Bonnington, Marisa Debowsky and Michael Prestidge
474: Resonance Quantum Switch , by A. Mikhailova and B. Pavlov
475: Resonance Quantum Switch and Quantum Gate , by N. Bagraev, A.Mikhailova, B. Pavlov and L.Prokhorov

(g) Videotapes and Films

King, C. Sakina Salaam Yeru Shalom − a 30 minute video and musical commentary on the Palestine−Israel conflict and its religious and cultural impact on gender relationships.

King, C. "Genesis of Eden" internet/CD diversity encyclopedia. 2001 edition
http://www.dhushara.com/book/genesis.htm

King, C. "Biocosmology" a paper on biogenesis and biological evolution as a complex system.
http://www.dhushara.com/book/biocos/biocos.pdf

(h) Other Works

AINLEY, J[4]., BARTON, B., JONES, K[4], PFANNKUCH, P. and THOMAS, M. 'Is What You See What You Get?', *Representations, metaphors and tools in mathematics didactics, CERME2,* 2001.

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CHAN, R.P.K. 'Symmetric, symplectic Runge−Kutta−Nystrom methods for separable Hamiltonian problems', *Presented at NZMC, Palmerston North*, Dec. 2001.

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OATES, G. and REILLY, I.L. 'A course for student tutors', *in C.Bohlman(ed.), Communications of DELTA 01, the Third Southern Hemisphere Symposium on Undergraduate Mathematics Teaching*, Kruger National Park, South Africa, July 2001, University of Pretoria, 75−78.

OATES, G. and THOMAS, M. O. J. 'Throwing out the bath water? Adapting curricula to reflect changes in technology', *Communications of Warthog Delta '01, The Third Southern Hemisphere Symposium on Undergraduate Mathematics Teaching*, Kruger National Park, South Africa, 2001, 79−84.

O'BRIEN, E.A. 'GrpPC' and 'Matrix', Two packages distributed in July 2001 with the Magma Computational algebra system (University of Sydney), to approximately 200 leading research institutions.

PFANNKUCH, M. 'Statistical Thinking and Research', *Statistical Education Research Newsletter* 2(1), 18−20, http://www.ugr.es/~batanero/sergroup.htm, 2001

OTHER MATTERS RELATED TO RESEARCH ACTIVITIES

Diploma, Honours and Masters Students

Name	Thesis Topic/Title	Supervisor(s)
Robyn Agnew	Project	Dr Bill Barton
Jessie Autagavaia	Project	Dr Bill Barton
Andreea Calude	Four colour theorem	Dr Paul Bonnington
Craig Carpenter	Summer Scholarship in Neural Nets	Dr Chris King
Mei−hua Chen	Safe corridors for kiwi birds	Dr Alastair McNaughton
Ruby Chen	Numerical Analysis of ODEs	Dr Robert Chan & Prof. John Butcher
Ming Chun	Project	Dr Bill Barton
Blair Daly	Project	Dr Bill Barton
Rosheen Gray (PGDipSCi)	Algebra learning and technology	Dr Mike Thomas
Doug Geise	Project	Dr Bill Barton
David Grant	Differential Geometry	Dr Rod Gover

Dan Griffen	Estimating the mass/stiffness ratio in beams from dynamic measurements	Dr Colin Fox
	The Lorenz Equations (summer project)	Dr Vivien Kirk
Martin Gwengo	Project	Dr Bill Barton
Rula Jihad	Combinatorial Proofs from the book Reading Project	Dr Paul Bonnington Dr Paul Hafner
Phil Houlding	Switching in heteroclinic networks (summer project)	Dr Vivien Kirk
Brendan Kayes	Bifurcation Theory (graduate project)	Dr Vivien Kirk
Simon Leong	Optimisation of petrol distribution with column generation	Dr Alastair McNaughton
Wayland Leung	A Statistical Investigation of Social Choice Functions	Dr Arkadii Slinko
K. Niederer	Identifying gifted Mathematics Students	Prof. Ivan Reilly & Dr K. Irwin (School of Education)
Mark Liu	Reading Project	Dr Paul Hafner
Michael Loretz	Changes in mathematics teaching, assessment, and reporting practices in schools as NCEA is introduced	Dr Maxine Pfannkuch
Helen McKenzie	History of Mathematics for Pre−Service Teachers	Dr Bill Barton
Chris O'Dowd	Project on finitely−presented groups	Dr Eamonn O'Brien & Dr Jianbei An
Mark Phillips (PGDipSCi)	Technology in Mathematics Education	Dr Mike Thomas
Albert Poleki	Project	Dr Bill Barton
Heather Pryor	Tertiary Students' Understanding of Statistically−Based Media Reports	Dr Maxine Pfannkuch
Jamie Pullar	The Great Barrier cat FIV epidemics	Dr Geoff Nicholls & Allen Rodrigo
Annette Rabach	Project in Chaos and Bifurcations	Dr Chris King
Nicky Roper	Project	Dr Bill Barton
Eddie Rosser	BVP solutions for Conductance Imaging via Sampling	Dr Colin Fox
	Inverse Problems	Dr Geoff Nicholls
Jonathon Sim	Bifurcation Theory (Thesis)	Dr Vivien Kirk
Becky Sommerville	Project	Dr Bill Barton
Moira Statham	Wellesley Programme Mathematics	Dr Bill Barton
Dejan Timarac	Using one−step methods of find the orbit of an asteroid	Dr Philip Sharp & Joel Schiff (advisor)
	Simulations of M32, M110 and the disk of M31	Dr Philip Sharp
Sanya Timarac	Mathematics of Finance	Dr Rod Gover & W. Solomon
Anna Torstensson	Smallest index common subgroups of commensurable Bianchi groups and tetrahedral groups	Prof. Marston Conder & Prof. Gaven Martin (advisor)
Priscilla Tse	The Lorenz equations (summer project)	Dr Vivien Kirk
Seamus Yim	Reading Project	Dr Paul Hafner
Caroline Yoon	Combinatorial Proofs from the book An analysis of students' statistical thinking	Dr Paul Bonnington Dr Maxine Pfannkuch
Shona Yu	One−relator quotients of the modular group	Prof. Marson Conder & Prof. Mike Newman (ANU)

PhD Students

Name	Thesis Topic/Title	Supervisor(s)
Shehenaz Adam	Ethnomathematics in the Maldives Curriculum	Bill Barton & Maxine Pfannkuch
Willy Alangui	Mathematics and Culture	Bill Barton
Alona Ben−Tal	A study of symmetric forced oscillators	Vivien Kirk & Geoff Nicholls
Hyuck Chung	Sea−ice dynamics	Colin Fox & Mike Meylan
Nicoleen Cloete	Probability theory and Stochastic Processes with application in population genetics and phylogenetic (Biological Sciences) inference	Geoff Nicholls & Wiremu Solomon & Allen Rodrigo
Alan De Los Santos	Graphics Calculators in Mathematics Learning	Mike Thomas
Peter Dobcsanyi	Adaptations, Parallelisation and Applications of the Low−Index Subgroups Algorithm	Marston Conder & Peter Gibbons (Computer Science)
Grant Emms	Active sound power absorbers: their effect on sound transmission through openings	Colin Fox
Jianhua (Jeff) Gong	Geometry & Analysis	Gaven Martin & Norm Levenberg
Gareth Hegarty	Control theory and partial differential equations	Stephen Taylor & Graeme Wake (Adviser)
Shirley Huang	Numerical Methods for ODEs	Rober Chan & John Butcher
Edward Huang	Representations of Finite Groups	Jianbei An & Eamonn O'Brien
Sanka Liyanage	Informal assessment of secondary school mathematics teachers	Mike Thomas and Kay Irwin
Andrei Korobeinikov	Dynamical Systems	Wayne Walker & Alex McNabb
Sione Na'a−Pangai Ma'u	Pluripotential Theory	Norm Levenberg
Barbara Miller−Reilly	Affective change in adult students returning to the study of mathematics Gender and mathematics education	Kay Irwin (Education) & Constance Brown (Statistics)
Nicolette Moir	Numerical Analysis	John Butcher & Robert Chan
Greg Oates	Technology and the Mathematics Curriculum	Mike Thomas & Bill Barton
Debasish Roy	Markov chain Monte Carlo algorithms, Bayesian Inference, Inverse problems	Geoff Nicholls & Colin Fox
Sasha Rubin	Topics in Computational Algebra	Eamonn O'Brien & Marston Conder & Bakhadyr Khoussainov (Computer Science)
Thomas Scelo	Sound transmission through light timber−framed structures	Colin Fox
Jamie Sneddon	Planar Infinite Graphs	Paul Bonnington
Sanja Todorovic−Vasilevic	Symmetries of non−orientable surfaces	Prof. Marston Conder & Dr Eamonn O'Brien
Chung−Ju (Jeff) Tsai	Complex Analysis & Geometry	Gaven Martin & Norm Levenberg
Brian Van Dam	Topology	David Gauld & Mavina Vamanamurthy (Adviser)
William Wright	Numerical solution of differential equations	John Butcher & Robert Chan
Kaimin Zhang	The Representation of Finite Groups	Jianbei An & Eamonn O'Brien

Research Fellows & Visitors

Name	Affiliation
T. Bagby	Indiana University
Dr F. Barrington	University of Melbourne
Andy Begg	Waikato University
Rolf Biehler	Kassel University
Prof. Alan Bishop	Monash University
T. Branson	University of Iowa
Chris Breen	Capetown University
Prof. M. do Carmo Domite	Univ. Sao Paulo
Prof. John Cannon	University of Sydney
Elena Celledoni	U. Trondheim
Andreas Christen	CIMAT, Mexico
Prof. Neville Davies	Director, Royal Statistical Society Centre for Statistical Education UK
Willi Doefler	Klagenfurt University
Dr Charles Eaton	University of Birmingham
Prof. Bettina Eick	Braunschweig
Marilyn Fankenstein	Univ. Mass.
Prof. Paul Fong	University of Illinois at Chicago
Prof. J. Engelbrecht	University of Pretoria
Wayne Enright	U. Toronto
Alan Graham	Open University, UK
A/Prof. George Havas	University of Queensland
K. Hirachi	University of Tokyo
Prof. G. Hiss	RWTH Aachen, Germany
Young Hong	VUW
Peter v.d. Houwen	C.W.I
Eva Jablonka	Free−University, Berlin
Prof. Jari Kaipio	University of Kuopio, Finland
Dr Ville Kolehmainen	University of Kuopio, Finland
Prof. L.G. Kovacs	The Australian National University, Canberra
Dr Colin Maclachlan	University of Aberdeen
Prof. Gunter Malle	Kassel University
Francesca Mazzia	U. Bari
Jesper Moller	Aalborg, Denmark
Dr F. Mynard	Bourgogne University, France
Prof. Mike Newman	Australian National University
Trine Nielsen	Denmark
Brynjulf Owren	U. Trondheim
Dr Primoz Potocnik	University of Ljubljana
Prof. Cheryl Praeger	University of Western Australia
Prof. T. Sallee	University of California, Davis
Mary Silber	Northwestern University
Prof. David Smith	Duke University, North Carolina, USA
Gustav Soderlind	U. Lund
Prof. Erkki Somersalo	Helsinki University of Technology, Finland
Havard Rue	Trondheim, Norway
Prof. K. Uno	Osaka University
Dr Remi Vaillancourt	University of Ottawa
Prof. Steve Wilson	Northern Arizona University
Leigh Wood	University of Technology, Sydney
Prof. Nanhua Xi	Chinese Academy of Sciences

Seminars by Visitors, Honorary Research Fellows, Staff and Research Students

Carlo Laing (Physics, Ottawa, CA): Memory, perceptual oscillations and noise − some aspects of neural modelling

Professor John Cannon (University of Sydney): Software tools for public key cryptography
Professor John Cannon (University of Sydney): Finitely−presented groups: finite or infinite?
Ville Kolehmainen (Department of Applied Physics, Kuopio, Finland): Optical Tomography in Breast Cancer Detection
Professor Katsuhiro Uno (University of Osaka): Conjectures on character degrees of finite groups
Mary Silber (Northwestern University): Parametrically Excited Surface Wave Patterns
Dr Mike Thomas (Mathematics Education Unit, Mathematics Department, University of Auckland): Mathematical Representations: Procedural and Conceptual Interactions
Nicoleen Cloete (University of Auckland): Stochastic processes in the development of a genealogy
Anna Torstensson (visiting PhD student) (Lund University, Sweden): Lowest index common subgroups of commensurable Bianchi groups and tetrahedral groups
Alexei Filinkov (Mathematics, Adelaide University): White Noise Approach to Interest Rate Models
Professor Dr. Willi Doerfler (University of Klagenfurt, Austria): Symbolising actions as a way to mathematical concepts
David Robinson (King's College London): An introduction to generalized differential forms
Dr Dane Flannery (University College Galway): Classifying irreducible monomial linear groups over finite fields
Professor Cheryl Praeger (University of Western Australia): Computers in Algebra: new answers, new questions
Sina Greenwood (Department of Mathematics): The Svalbard conjecture
Lawrence M. Wein (Sloan School of Management, MIT): Some Mathematical Models of Cancer Treatment
Yu Hayakawa (Statistics, Victoria, Wellington): Bayesian nonparametric testing of constant versus nondecreasing hazard rates
Bill Barton (Department of Mathematics, UA): Aldis was a gossip: why mathematics is like a soap operaAbdul Mohamad (Department of Mathematics): Symmetric Heath Functions
Jamie Sneddon: Tournaments − Domination and Embedding
Ilze Ziedins (Statistics, Auckland): Markov random field models of multicasting in tree networks
Brian Van Dam, Abdul Mohamad and David Gauld (Department of Mathematics): The Prague Topology Symposium
Dr Eva Jablonka (Free University of Berlin): Applications of mathematics: what do we really want students to learn?
Boris Pavlov (Mathematics, Auckland): The Merchant Problem, the Turing barrier and Quantum Computing
Rosheen Gray (Senior College, Auckland): Current research studies in Australasia : A teacher's perspective.
Peter Smith (Electrical & Electronic Engineering, Canterbury): Random Matrices in Communications Engineering
Professor Mike O'Sullivan (Department of Engineering Science): Computer modelling of geothermal fields
Professor Johann Engelbrecht (University of Pretoria): Mathematics is not for Grown−ups
Mark Bebbington (IIST, Massey University): Stochastic Models of Regional Seismicity
M.F. Newman (Australian National University): Constructing Lie Algebras
George Havas (University of Queensland): Presentations for the trivial group
Dr Frank Barrington (Melbourne University): Successes and Failures in First Year Mathematics Curriculum Delivery
Geoff Austin (Physics, Auckland): The statistical description of Clouds and Rainfall
Dr Margaret Walshaw (Massey University): Mathematics Education Catches the Post
Profesor Dr Rolf Biehler (Kassel University, Germany): Assessing statistical competence with tests and interviews
Darlene Heuff (Physics, Canterbury): The Preferred Scale of Convection
Andy Philpott (Engineering Science): Optimisation in electricity pool markets
Dr Chris Breen (University of Capetown, South Africa): Researching One's Own Practice: Tales of a Addict.
Leslie Woods (Mathematical Institute, University of Oxford, UK): Accelerating the Solar Wind
Allan Rodrigo (School of Biological Sciences, University of Auckland): The mathematics of evolution
Profesor Tom Sallee (University of California, Davis): Math Wars in America: An Insider's View.
Alastair McNaughton (Mathematics, Auckland): Optimising forest harvesting subject to area restricted adjacency constraints
David Yost (King Saud Univ. (Saudi Arabia)): Projections on big Banach spaces
Bruce Calvert (Mathematics, Auckland): A K−winner−takes−all network

Professor Neville Davies (Director, Royal Statistical Society Centre for Statistical Education, UK): The work of The Royal Statistical Society Centre for Statistical Education
Professor Maurice van Putten (MIT): Gamma−ray bursts: short for HETE−II, long for LIGO/VIRGO
Various speakers: Dynamical Systems Workshop
Peter Donelan (Mathematics, Victoria, Wellington): Manipulator Geometry from a Singular Perspective
Frederic Mynard (Universities of Auckland and Burgoygne): Closure spaces as an appropriate context for generalized closed sets. Links with state property systems and physics.
Dr Richard Hamilton (School of Education, University of Auckland): Self−efficacy: Implications for teaching and learning
Gerhard Hiss (RWTH Aachen): Representations of finite groups: Objectives and some open problems
Bruce Calvert (U. of Auckland): Using degree to find multiple solutions for a three point boundary valueproblem
Professor David Smith (Duke University, North Carolina, USA): Technology in University Calculus
Scott Houston (SGI Regional Manager): The future of high−performance computing
Irine Peng (U. of Auckland): Tight frames of Jacobi polynomials on a simplex
Rua Murray (Mathematics, Waikato): What is left to study in the logistic family?
Andrew Lawson (Mathematical Sciences, Aberdeen): Hierarchical Probability Models and Bayesian Analysis of Mine Locations
Trine Nielsen: The Danish Education System with Emphasis on Technology
David Gauld (Department of Mathematics): Metrisability of Manifolds in terms of Function Spaces
David Vere−Jones (Mathematical Sciences, Victoria, Wellington): Likelihoods, entropy, and the scoring of probability forecasts
Marston Conder (Auckland): Centres of Hurwitz Groups
Frederic Mynard (Universite de Bourgogne): Convergence−theoretic approach to product theorems
Vladimir Oleinik (St. Petersburg State University): Jacobi series, lemniscates and the spectrum of perturbed shift.
Mark McGuinness (Mathematics, Victoria, Wellington): Sun on Sea Ice
Frederic Mynard and Aurelie Petesch: The French education system and, in particular, mathematics in highschool and university.
Sina Greenwood (Department of Mathematics): ω_1−compact manifolds II.
Geoff Nicholls (Mathematics, Auckland): Bayesian population−genetic inference
Colin Maclachlan (Aberdeen): Hyperbolic Coxeter groups, Gram matrices and arithmetic groups
Philip Sharp (University of Auckland): The Billion Year Jovian Problem
Sina Greenwood (Department of Mathematics): ω_1−compact Type I manifolds
Philip Sharp (University of Auckland): The billion year jovian problem
Hamish Spencer ((Zoology, Otago)): Some Difference−Equation Models in the Population Genetics of Genomic Imprinting
Sina Greenwood and Ivan Reilly (University of Auckland): A unified view of generalised closed sets in topological spaces
Alan Graham (Centre for Mathematics Education, Open University, UK): Targeting ? a strategy going in the wrong direction?Paul Hafner (University of Auckland): Petersen, Hoffman−Singleton, ...
Matthew Perlmutter (Cal Tech/ Massey U.): Symplectic and Conformal Reduction
M.F. Newman (Australian National University): Classification and enumeration of p−groups
Marilyn Frankenstein (State University of New York): Making Adult Numeracy Intellectually Challenging: Clarity and Confidence through Complexity
Marilyn Frankenstein (State University of New York): Critical Mathematical Literacy: Teaching through Real Real−Life Mathematics Applications
M.F. Newman (Australian National University): The Erdos−Straus conjecture and other questions related to unit fractions
M.F. Newman (Australian National University): The Erdos−Straus conjecture and other questions related to unit fractions
Vladimir Oleinik (St. Petersburg State University): Carleson measures and uniformly perfect sets
Frederic Mynard (Universite de Bourgogne): Convergence−theoretic approach to quotient quest (mainly fromS. Dolecki)
Mike Meylan (IIMS, Massey, Auckland): Wave Scattering in the Marginal Ice Zone
Bettina Eick (University of Kassel): Computing with infinite polycyclic groups
Frederic Mynard (Universite de Bourgogne): Strongly sequential spaces
Prof. Tom Bagby (Indiana Uniersity): Sobolev spaces and applications to approximation theory
Paul Cowpertwait (IIMS, Massey, Auckland): A space−time Neyman−Scott model of rainfall and a scaling law for the extreme values
Mike Hirschhorn (niversity of New South Wales): Ramanujan’s most beautiful identity

Mike Hirschhorn (niversity of New South Wales): Ramanujan's most beautiful identity
Shayne Waldron (with Irine Peng) (University of Auckland): Signed frames and Hadamard products of Gram matrices
Boris Pavlov (University of Auckland): Abstract version of Titchmarsh−Weyl function: Krein formula
A. Rybkin (Alaska, Fairbanks): Titchmarsh−Weyl m−function on the intervalCatherine Hobbs (Mathematics, Oxford Brookes, UK): Singularity Theory and Applications
Steve Wilson (University of Arizona (Flagstaff)): The Capuzzi Dichotomies
Steve Wilson (University of Arizona): The Capuzzi Dichotomies
Frederic Mynard (Universite de Bourgogne): Sequentiality of the upper Kuratowski convergence
Geoffrey Pritchard (Statistics, Auckland): Offering hydro−electricity in a stochastic price environment
John Holt (Harvard University): A rigidity result for limits of hyperbolic 3−manifolds
L.G. Kovacs (Australian National University): Symmetries of Lie Algebras
Professor Paul Fong (University of Illinois at Chicago): Shintani Descent and Broue's Conjecture
Professor Eli Glasner (Tel−Aviv University): The topological Rohlin property and topological entropy
Colin Fox (Mathematics, Auckland): Direct measurement of the dispersion equation in fast ice and pack ice
Petar S. Kenderov (Institute of Mathematics and Informatics, Bulgarian Academy of Sciences): Weakly continuous mappings into Banach spaces
J. Andres Christen (CIMAT, Guanjuato): "Sequential stopping times for accumulation curves"
Professor Nanhua Xi (Chinese Academy of Science): Kazhdan−Lusztig cell of Coxter group
Professor Paul Fong (University of Illinois at Chicago): Shintani Descent and Broue's Conjecture
Jari Kaipio and Erkki Somersalo (Kuopio, Finland, (JK) HUT, Finland (ES)): Imaging moving objects with electricity
Havard Rue (Department of Mathematical Sciences The Norwegian University of Science and Technology): On Gaussian Markov Random Fields

Research Grants

MARSDEN FUND GRANTS

Dr P. Bonnington & R. Aldred (Otago)	Planar Graphs ($43,000 Year 3)
Prof. J. Butcher & Dr R. Chan	Efficient methods for ODEs ($228000)
Prof. M. Conder, Dr J. An & E. O'Brien	Effective computational approaches to questions in group theory and its applications ($54000 include GST)
Prof. V. Jones, M. Conder, R. Downey (VUW), D. Gauld & G. Martin	Interactions between branches of mathematics, with applications to biology, statistics and physics ($87000 include GST)
Prof. I. Reilly & B. Barton	Language dependence of mathematical concepts ($230000)
V. Squire, C. Fox & M. Meylan	Wave Scattering Theory Applied to the Marginal Ice Zone ($104,000 p.a.)
R. Gray, G. Nicholls	Language evolution ($450000)

OTHER EXTERNAL GRANTS

Dr Bill Barton	Royal Society: Maths Enhancement Project ($25000) Woolf Fisher Research Centre: Maths Enhancement Project ($16000)
Dr Arkadii Slinko	NATO: NATO Advanced Research Workshop "Mathematical Theories of Allocations of Discrete Resources" in Istanbul in December, as an invited speaker ($1000 USD)
Dr G. Nicholls	Inverse problems, MaPhySto, Denmark ($6000)

Dr Mike Thomas	Commonwealth Science Council:Travel grant to attend ICMI conference ($3500) Texas Instruments: MERGA Conference funding ($3000)

AUCKLAND UNIVERSITY STAFF RESEARCH GRANTS

Bill Barton	Language and Topology ($8000) Indigenous Languages and Mathematics ($6000)
Rod Gover	Differential Geometry etc ($6000)
Vivien Kirk	Dynamical Systems Workshop ($1250) Switching in heteroclinic networks ($1000) U of A Foundation ($7500)
Dr David McIntyre	Topology Dictionary and Topology Encyclopaedia ($3500)
Dr E. O'Brien	Constructive recognition of sporadic simple groups ($4630)
Prof. Ivan Reilly	Topological studies ($5500)
A. Rodrigo, G. Nicholls	Epidemics in cat populations($25,000)
Dr M..O.J. Thomas	A CAS Integrated Mathematics Curriculum ($6050)
Dr M..O.J. Thomas, Mr A. Santos & G. Oates	Conference attendance for 2 PhD students ($4500)

AUCKLAND UNIVERSITY GRADUATE RESEARCH GRANTS

Greg Oates	Mathematics Curricula and Technology: A Model for Change ($2500)

Staff leave and Conferences

Invited/plenary lectures marked with an asterisk (*)

Mr David Alcorn	NZ Mathematics Colloquium, Massey University, 3−6 December Lie Groups (LAQ 2001), University of Auckland, 7−10 December
Dr Jianbei An	Representations of Finite Groups, Oberwolfach, March
Dr Bill Barton	International Programme Committee meeting for ICME−19, Copenhagen NORMA01, Sweden MERGA−24, Sydney LOGOS #11, Auckland Workshop on Truths and Proofs, Auckland
Dr Alona Ben−Tal	Mathematics−in−Industry Study group 2001, University of South Australia, 20 Jan.−2 Feb. ANZIAM 2001 The 37th Applied Mathematics Conference, Barossa Valley, South Australia, 3−7 February Sixth SIAM Conference on Applications of Dynamical Systems, Utah, May 20−24
Dr Paul Bonnington	Long Leave: July − December 2001 Graphs Embeddings on Surfaces Conference, Bratislava, Slovakia, July* Slovene Graph Theory Conference, Bled, Slovenia, September
Prof. John Butcher	ANODE 2001, Auckland, January
Dr Bruce Calvert	Study leave, Italy, Jan/Feb Study leave, Israel, December

	Circuits and systems conference, Sydney, May Conference, Haifa, June Expert systems conference, Dunedin, November
Dr Robert Chan	ANODE, Auckland (Jan. 8−12) NZMC, Palmerston North (Dec 3−6)
Prof. Marston Conder	Special leave (July−November paid by VC's office, following term as DVC) George Szekeres 90th birthday conference, Sydney (May) Finitely−presented groups: questions & algorithms, Trento (July)* Groups St Andrews 2001, Oxford (August)* RSNZ Academy Annual Meeting & Conference on Biotechnology, Hamilton (November) NZ Mathematics Colloquium 2001, Palmerston North (December)
Dr Colin Fox	Long leave taken second semester of 2000, first semester of 2001 PIMS−MITCAS workshop on Inverse Problems and Imaging, Vancouver, Canada (June) InterNoise2001, The Hague, August 2001
Prof. David Gauld	Seventh New Zealand Mathematics Research Institute meeting, Nelson, 4−11 January Nordic conference on Topology and Applications, Sophus Lie Conference Centre, Nordfjordeid, Norway, 7−9 August Geometric Topology Conference, Longyearbyen, Svalbard, Norway, 10−14 August* 9th Prague Topological Symposium, 19−25 August New Zealand Mathematics Colloquium, Palmerston North, 3−6 December
Dr Rod Gover	8th International Conference on Differential Geometry and its Applications, Opava, Czech Republic Australasian Research Symposium on Lie Groups, Algebraic Groups, Quantum Groups and their Representations
Dr Paul Hafner	Long leave 2000, during semester 1 IWIN SIROCCO 2001 (co−located conferences, Vall de Nuria, Spain, June 25−29)
Dr Allison Heard	Anode 2001, Auckland. SciScade 2001, Vancouver Dynamics of Numerics, Fields Institute, Toronto(2 weeks) NZ Mathematics Colloquium, Massey, Palmerston North
Vivian Kirk	SIAM Conference on Applications of Dynamical Systems, Utah, 19−26 May Dynamical Systems Workshop, Auckland University, July
Dr A. Korobeinikov	NZMC 2001 Wellington−Manawatu Applied Math. Conference, 12th June
Prof. Gaven Martin	(Title: Arithmetic Kleinian groups and knot compliments), Hyperbolic Geometry and its applications, Fribourg Switzerland* (Title: Arithmetic (p,q)−orbifolds), Lie Groups, Auckland NZ * Arithmetic 2−bridge knots and links and surgeries, University of Helsinki Quasiconformal homogeneity, University of Jyvaskyla
A/Prof. Norm Levenberg	Unpaid leave to visit Syracuse University, September Complex Potential Theory, Nara, Kyoto University Japan, January SUNY Geneseo Colloquium talk, November

Dr David McIntyre	Short leave in the second semester 2001. Summer Conference on General Topology and its Applications, New York Nordic Conference on Topology and its Applications, Nordfjordeid, Norway Svalbard Geometric Topology Conference, Longyearbyen 9th Prague Topological Symposium
Dr Alastair McNaughton	ORSNZ, November Mathematics Colloquium, December
Ms Barbara Miller−Reilly	Undergraduate Mathematics Education Conference
Dr Geoff Nicholls	New Zealand Archaeological Society, Auckland, February 2nd MaPhySto workshop, Aalborg, April* 2nd Aalorg−Arrhus meeting on computer intensive stochastics, Arrhus, April Stochastic processes and their applications, Cambridge, August
Mr Greg Oates	Asia 2000 Foundation Exchange to University of Ateneo, Manila, Philippines, November 27th − December 31st WARTHOG DELTA '01 Conference, held in Kruger National Park, South Africa in July
Dr Eamonn O'Brien	Short condensed leave: July 17−August 24 Finitely−presented groups: questions and algorithms, Trento, Italy, July Computational Group Theory, Oberwolfach, July* Groups − St Andrews (Oxford), August*
Ms Judy Paterson	NZAMT
Dr Maxine Pfannkuch	NZAMT Conference, Wellington, 3−6 July* SRTL−2 International Research Forum, Armidale, NSW, Australia, 15−20 August LOGOS #10, Auckland, 3 September LOGOS #11, Auckland, 28 September
Prof. Ivan Reilly	Special Leave to visit Japan and China, October−November 2001 NZMRI Summer Workshop, Nelson, 4−11 January 2001 Devonport Topology Festival, February 2001 Delta01 International Conference on Undergraduate Mathematics Education, Kruger National park, South Africa, 1−5 July 2001 General & Geometric Topology Conference, RIMS, Kyoto, Japan, 17−19 October 2001.
Dr Philip Sharp	Annual conference for the Division of Dynamical Astronomy, a division of the American Astronomical Society, Houston, April
Dr Arkadii Slinko	A condensed leave was taken for six weeks from 16th September to 30th October A Workshop "Coding theory and Data Integrity" and a conference with the same name, Singapore (3−13 September) NATO Advanced Workshop "Mathematical Theories of Allocation of Discrete Resources, Istanbul, Turkey (16−19 December)
Mrs Moira Statham	NZAMT, Wellington, July LOGOS #10, Auckland Developing Research in Ethnomathematics, September Inaugural conference of Bridging Educators, Auckland, April
Dr Steve Taylor	SIAM Conference on Control and its Applications, San Diego, 11−13 July New Zealand Mathematics Colloquium, Massey University, 3−6 December
Mr Garry Tee	NZMRC Summer Workshop 2001 on Operator Algebra, Nelson

	Colloquium 2001 at Massey University
Dr Mike Thomas	Short leave taken semester 2, 2001 Auckland Mathematics Association Heads of Mathematics Departments Conference, March MERGA, Sydney, July The International Congress of Mathematical Instruction Working Group on Algebra Invited participants only), Melbourne, December Computer Algebra in School Mathematics, Melbourne, December*
Dr Tsukasa Yashiro	Topology Seminar, Nara Women's University, Nara, Japan, January Workshop on 4−manifolds and Embeddings of Surfaces, Research Institute for Mathematical Sciences, Kyoto, Japan, July Mathematics Seminar, Tokai University, Kanagawa, Japan, July

COMMUNITY SERVICE

Mr David Alcorn: Chairperson/Treasurer of the Mathematical Chronicle committee, Chairperson and Acting−Treasurer of the New Zealand Journal of Mathematics Committee.

Dr Bill Barton: Mathematics Education Research Group Australia, NZ Mathematics Society − Executive member, Auckland University Lecturers Association committee, Representative on Ministry of Education Curriculum Audit.

Dr Robert Chan: Organizer of international ANODE meeting.

Prof. Marston Conder: Member of Enterprise Information Project Steering Group, Member of FRST's NZ Science and Technology Postdoctoral Fellowships Advisory Committee, Member of Bright Future Scholarships Advisory Committee, Member of Tertiary Education Advisory Commission's Working Group on Tertiary Research, Member of NZ Vice−Chancellor's Committee Research Sub−Committee, Co−chair of Review of James Henare Maori Research Centre , Member of assessment panel for Emerging Research Activities Fund., Director (and Treasurer) of NZ Mathematics Research Institute.

Prof. David Gauld: Director (and Secretary) of NZ Mathematics Research Institute.

Dr Alison Heard: Anode 2001, Committee member of ANZIAM (NZ Branch).

Prof. Gaven Martin: Editor of NZ Journal of Mathematics, Director of NZ Mathematics Research Institute.

Ms Barbara Miller−Reilly: Main New Zealand contact for the Australasian Bridging Maths Network, New Zealand Agent for the European organisation Adults Learning Mathematics.

Dr Eamonn A. O'Brien: Member of GAP council/Editorial Board.

Dr Maxine Pfannkuch: IASE national correspondent, ICOTS−6 Session Organiser, ISI−54 Session Organiser.

Prof. Ivan Reilly: (Foundation) Chair of the NZ Mathematical Olympiad Committee, NZ Liaison Officer under NZVCC.

Dr Arkadii Slinko: Contributed all problems to the Auckland Mathematics Olympiad 2001. NZ Mathematics Olympiad Team training camp.

Dr Michael Thomas: Auckland Mathematical Association executive, Editor of the NZ Mathematics Magazine.

VII. OTHER MATTERS

Staffing

I am very grateful to the support given by the members of the general staff of the Department, especially at a time when the University seems unable to finance sufficiently many general staff. Jaya Venugopalan runs an outstandingly successful Student Resource Centre: so successfully that even the Department of Psychology is to make use of her services. The Department Manager, Ross

McCallum, has the staff in the general office working smoothly (but I have some concerns that they seem to have to spend so much time on financial matters with insufficient time to provide typing support for such activities as preparing the Annual Report: I really think that it is inefficient for the University to expect this report from me but deny me the typing support I need to produce it). Following reorganisation the computer support staff are working very well for the Department. In particular it is pleasing that the University recognised the major contributions made by Feng Yang to the smooth running of the equipment in the Department. Olita Moala's contribution during the year was recognised with a Faculty of Science General Staff Award in December.

As already noted Dr Walker retired on health grounds at the end of the year. Dr Walker's health began to deteriorate following an accident in a University carpark. The Department is grateful to him for his outstanding service over three decades. We wish him well in his retirement and particularly that his health will be restored quickly.

Following his retirement at the beginning of 1999, Professor John Butcher's chair in Applied Mathematics has still not been filled. However a search for his replacement got under way late in the year and an appointment is imminent. The search for a replacement for Professor Graeme Wake, who resigned from his chair in Industrial Mathematics to go to the University of Canterbury, was less successful and in the end no appointment was made. Other plans have been made for the support of the Industrial Mathematics Programme, which is jointly run with the Departments of Engineering Science and Statistics and it is expected that these will revive the programme.

Soon after his appointment, the Dean approved two new positions in the Department and by the end of the year we had selected short lists for an associate professorship and a lectureship. This will help restore the imbalance between long−term and short−term appointments in the Department, though I still feel that we have a higher proportion of short−term appointees than is desirable. Furthermore we can expect more retirements of permanent staff in the next few years.

The following academic staff were successful in their applications for promotion:

Dr Bill Barton	to Associate Professor
Dr Geoff Nicholls	to Senior Lecturer
Dr Shayne Waldron	to Senior Lecturer
Dr Allison Heard	over Senior Tutor bar
Ms Pam Hurst	over Senior Tutor bar

Department Administration

Many staff members have made substantial contributions to the effective administration of the Department. Thanks are especially due to the Department Manager (Ross McCallum) and all the general staff, and to the following staff for taking on key responsibilities in the Department:

Deputy Head of Department	Mr David Alcorn
Departmental Committee	Mr David Alcorn, Dr Bill Barton, Prof. Marston Conder, Dr Paul Hafner, Dr Vivien Kirk, Prof. Ivan Reilly
Department Staffing Advisory Committee (Academic Promotions)	Mr David Alcorn, Prof. John Butcher, Dr Robert Chan, Prof. Marston Conder, Dr Paul Hafner, Prof. Boris Pavlov, Prof. Ivan Reilly
Academic Staff Performance Reviewers	Dr Bill Barton, Prof. Boris Pavlov, Prof. Ivan Reilly
Head of Mathematics Education Unit	Dr Mike Thomas/Dr Bill Barton
Head of Tamaki Mathematics Group	Dr Robert Chan
Director of Graduate Studies PhD	Dr Sina Geenwood and Dr Shayne Waldron
Director of Graduate Studies MSc	Dr Wayne Walker and Dr Rod Gover
Teaching Coordinator	Dr Paul Hafner
Computing Services	Dr Paul Bonnington, Dr Eamonn O'Brien, Dr Philip Sharp, Dr Mike Thomas
BTech (Industrial Maths) Coordinator	Dr Steve Taylor

Enrolment Coordinator	Mr David Alcorn
Timetable Administrator	Mr Chris King
Examinations Coordinator	Mr Chris King
Publicity Officer	Dr Bill Barton
Regulations/Handbooks	Dr David Smith
EEO/EEdO Representative	Dr Bruce Calvert
NZ Mathematical Society Correspondent	Mr Garry Tee
Webmaster	Dr Shayne Waldron
Overseas Students & Ad Eundum Admissions	Mr David Alcorn
Library Liaison Officer	Mr David Alcorn
Convener of Staff/Student Liaison Committee	Mr Greg Oates
Director Mathematics Learning Centre	Mr Greg Oates
Organiser of the Undergraduate Laboratories	Ms Nicolette Moir
Markers Coordinator	Mr Roy Swenson
Department Research Report Series	Mrs Olita Moala
Safety Officer	Mr Ross McCallum
Seminars:	
Algebra, Geometry & Combinatorics	Dr Jianbei An
Analysis	Dr Rod Gover
Applied, Computational & Industrial Maths	Dr Robert Chan Ms Barbara Miller−Reilly
Mathematics Education	Prof. David Gauld and Dr Sina Greenwood
Topology	
Faculty Representatives:	
Arts	Mr David Alcorn
Business and Commerce	Dr Joel Schiff
Engineering	Dr Geoff Nicholls

University Committees:

Mr David Alcorn: Library Liaison Officer, Member of Science Group Library Committee, Member of Arts Faculty Board of Undergraduate Studies

Dr Bill Barton: Departmental Representative for Freshers Welcome, Sub−professorial Interviewing Committee for Dean of Science appointment, Auckland University Human Subjects Ethics Committee − Nominee of DVC Research Education Committee.

Dr Paul *Bonnington:* University, Faculty Information Technology Committees.

Dr Robert Chan: Associate coordinator for Courses and Careers Day at Tamaki Campus.

Prof. Marston Conder: Chair of University's Budget committee, Member of Vice−Chancellor's Advisory Committee, VC's Representative on various selection committees Member of University's TEAC Reference Group, Deputy Vice−Chancellor (Research), Chair of University's Research Committee, Member of University's Capital Planning & Budget Committee, Member of University's International Committee, Member of University's Postgraduate & Scholarships Committee, Member of Board of Auckland UniServices Ltd.

Dr Colin Fox: Head of the Acoustics Research Centre.

Dr Vivien Kirk: Bump into Science day for school girls (helped prepare exhibits).

Prof. Ivan Reilly: Acting Director of the University at Manukau Programme (UAMP), Member of the joint committee MIT/UoA, Board of Studies in Education, Board of Foundation Studies, Member of the newly formed Year 13 Studies Committee, Esquire Bedell.

Dr Stephen Taylor: Co−Ordinator for the Btech Industrial mathematics Programme. Btech Board of Studies.

New Zealand Journal of Mathematics

The New Zealand Journal of Mathematics is jointly produced by the Department and the New Zealand Mathematical Society. The Editorial staff consists of Prof. Gaven Martin (Editor), Dr Joel Schiff (Executive Editor), Dr Jianbei An (Associate Editor), Ms Lee Min Young (Editorial Assistants), and Ms Betty Fong (Production Assistant). Two issues of Volume 30 (Numbers 1 and 2) of the NZJM were published during the year. Members of Department who have served on the Editorial Board are Professors John Butcher, Marston Conder, David Gauld, Vaughan Jones and Gaven Martin, and the Department's representatives on the Management Committee are Mr David Alcorn (who is also convener of the Committee) and Prof. Ivan Reilly.

VIII.

OVERALL COMMENTS ON WORK AND PROGRESS WITHIN THE DEPARTMENT

The Department is actively pursuing the broad aims set out in the University's mission documents, encouraging a high quality environment for teaching and learning, continuing to undertake world class research in a wide range of areas, and attracting and supporting an increasing number of postgraduate students. The Department is clearly the strongest department in this country by any measure, and in almost every area. Within Australasia we rank within the top few.

Our ability to achieve greater aims is hampered by a relatively low level of resourcing, and of considerable worry is the lack of adequate tutorials for undergraduate students. The Department was externally reviewed in 1998, and received a laudatory report on its research and teaching programmes, along with some constructive suggestions for further developments. These have largely been implemented. However, the lack of a properly mounted system of tutorials was highlighted and has not been able to be addressed properly.

On a personal note, I would like to thank my predecessor, Prof. Gaven Martin, for his two and a bit years as Head of Department, during which time he has added his valuable insight into the administration of the Department. I wish him well during his tenure of the James Cook Fellowship.

David Gauld
Professor and Head of the Department of Mathematics