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NEWSLETTER

OF THE

NEW ZEALAND MATHEMATICAL SOCIETY

Contents

PUBLISHER'S NOTICE

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http://www.math.waikato.ac.nz/NZMS/NZMS.html (Webmaster: stephenj@math.waikato.ac.nz)

The newsletter is available at: http://IFS.massey.ac.nz/mathnews/NZMSnews.shtml

Editorial enquiries and items for submission to this journal should be submitted as text or LaTeX files to mark.mcguinness@vuw.ac.nz.

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EDITORIAL

Gentle Reader,

there always seems to be so much to report when each maths department in New Zealand has sent in their local news. Lots of meetings, visitors, Marsden awards, postdocs and grad students on the go.

Carlo Laing won the JH Mitchell Medal for outstanding new researcher. Rod Gover is off to Princeton for a while. Antonio Politi (postdoc at AK), has won the Reinhart Heinrich Award for the best PhD thesis in Mathematical Biology in the world. Chris Wild is now FRSNZ. Stephane Guindon, new at AK Stats, has co-authored an article that has been cited over 1,000 times. The number of new appointments in Auckland, Waikato and Otago is heartening, although Waikato continue to struggle with low staffing numbers.

Here at Vic we are in the happy process of appointing three new positions in mathematics and one in statistics, and we also have a new Statistics Consultant (Nokuthaba Sibanda). This represents maintaining the status quo if you look back far enough, or an increase in academic numbers if you only look at recent years staffing levels.

Mark McGuinness
Editor

Some photos from the Workshop on Multi-scale Modelling of the Respiratory System, 19-22 February 2008, Auckland

(See http://www.mcs.vuw.ac.nz/~markm/MMR08/MMR08.html for more photos)

LOCAL NEWS

AGRESEARCH

The mathematical biology group hosted a brief visit by Professor Sasha Panfilov from the Department of Theoretical Biology, Utrecht University, The Netherlands. Sasha gave a seminar on integrative computer modelling in cardiac electrophysiology and the underlying mechanisms behind cardiac arrhythmias on the 13th of March 2008. There was a great deal of interest given Rob Waddell's highly publicised heart problem during the recent Olympic rowing trials.

Kumar Vetharaniam departed on a two month trip to Europe where he will travel around the continent and also attend the Conference on Systems Biology of Mammalian Cells in Dresden, Germany to present work on gene regulation of embryogenesis.

Our group is currently actively looking for a recent mathematics graduate to pursue a PhD and apply their skills in the biological sciences. This programme will include researchers from AgResearch, the University of Auckland and the French Agricultural Centre (INRA).

Paul Shorten

THE UNIVERSITY OF AUCKLAND

DEPARTMENT OF MATHEMATICS

Jari Kaipio and Claire Postlewaite have accepted appointments as Senior Lecturers in Applied Mathematics. Jari is expected to arrive early in Semester 1, and Claire is expected to arrive in mid-August.

Dr Isabel Hubard has been appointed as a temporary lecturer for 2008. She will teach some of the courses which had been taught by Paul Bonnington, who left in December 2007 to take up his Chair at Monash University. Isabel completed her PhD on polytopes at York University (Toronto) last year under the supervision of Asia Weiss, and this is her first postdoctoral appointment.

Bill Barton's book on "The Language of Mathematics" has been published by Springer-Verlag, and he was awarded a prestigious Hood Fellowship by the University of Auckland. He'll spend part of Semester 1 at Oxford University as Hood Fellow. Rod Gover will be Acting Head of the Department for 2 months, followed by Eamonn O'Brien for 3 months. On January 10 a Departmental party celebrated Bill's 50th birthday, plus the arrival of a new grandson.

Hannah Bartholomew has been promoted to Senior Lecturer.

David Bryant has been promoted to Associate Professor, and he is currently on leave in Turkey.

John Butcher's treatise "Numerical Methods for Ordinary Differential Equations", has now been published by Wiley (Chichester), in a revised and enlarged second edition.

Rod Gover has received a very prestigious appointment as a Temporary Member of the Institute for Advanced Studies at Princeton, from September to December 2008. The only previous New Zealander to receive that honour was Timothy O'Meara (ex University of Otago), in 1954.

Warren Moors has been promoted above the Senior Lecturer bar.

Greg Oates has been promoted above the Senior Tutor bar.

Boris Pavlov's retirement was celebrated by a Symposium on December 17, with the following lectures:

Sergei Avdonin (University of Fairbanks - Alaska), "Boundary control approach to the Gelfand-Levitan-Krein theory",

Boris Belinsky (University of Tennessee - Chattanooga), "Ice-covered ocean wave guides and operator polynomials",

Jochen Brüning (Humboldt Universität - Berlin), "On the spectral theory of carbon nanotubes".

John Butcher, "Order and stability barriers".

Colin Fox (University of Otago), "Probabilistic methods for inverse problems".

Vaughan F. R. Jones, "Random matrices, free probability, planar algebras and subfactors".

Yulia Karpeshina (University of Alabama - Birmingham), "Zero-range potentials: from periodic to random models".

Mike Meylan, "Generalized eigenfunction expansions for a floating elastic plate".

Gaven Martin (Massey University - Albany), "Riemann surfaces".

Boris Pavlov, "Towards prediction of earthquakes: nano-scale methods for tectonic plates".

Gunter Stolz (University of Alabama - Birmingham), "Non-degeneracy of dense eigenvalues in random Schrö dinger operators".

Graeme Wake (Massey University - Albany), "Inverse methods for identifying foreign objects from the processing of microwave signals".

Hugh Woodin (University of California - Berkeley), "The inner model program".

Barbara Miller-Reilly's retirement function was held on 12th February in Old Government House to celebrate her contributions to Adults Learning Mathematics, The Student Learning Centre, EQUALS and to The University of Auckland's Department of Mathematics. An audience of more than 60 people attended the 4 seminars that preceded the congenial drinks and nibbles. The talks traced Barbara's many-faceted contributions to the teaching and learning of mathematics. Maxine Pfannkuch and Jill Ellis outlined the work of EQUALS that Barbara helped to establish in New Zealand, and which played such an important part in the professional growth of women mathematics teachers in the 1980s. Barbara Grant, in the participatory manner associated with learning in the Student Learning Centre fashion, had us line up in order of how long we had known Barbara M-R. She was a foundation staff member of the SLC and responsible for setting up its mathematics and science program. A Distinguished Teaching Award was made for her work with students fearful of mathematics. Bill Barton highlighted Barbara's contributions to the Department of Mathematics (and along the way to Engineering in the University of Illinois and to Computing) in general, and to the Mathematics Education Unit in particular. In addition to working in a number of the bridging and entry-level programmes, Barbara has always played a key role in helping visitors to feel at home during their stay in Auckland. Professor Diana Coben of King's College London spoke of her work which focuses on adults learning mathematics, and of the key role that Barbara has played in this field, the focus of her doctoral studies

On Monday 18 February the Department of Mathematics celebrated the contributions of recently-retired Professor Ivan Reilly. Many of Ivan's accomplishments are found in the NZMS Newsletter Centrefold dedicated to him in Issue 94 so are not repeated here. Ivan has published papers with 51 co-authors. The celebrations commenced with talks by Ivan's most frequent co-author, Max Ganster of Graz University of Technology, who spoke about Ivan as a mentor and friend as well as mathematical colleague, Bill Barton, the current Head of the Auckland Mathematics Department and a mathematics educator, who spoke about Ivan's many contributions to Mathematics Education in its widest sense, and then a response by Ivan in which he spoke about his background, his career and some of his ideas about the way Universities are developing. After that we adjourned to Old Government House where there was an opportunity for people who had known Ivan in a range of roles to reminisce over drinks and nibbles. The Department wishes Ivan a long and exciting retirement and looks forward to his continued presence in the Department despite being off the payroll.

Emma Luxton-Reilly, the daughter of Barbara and Ivan, is now employed by the Californian Education Abroad Programme. She has been appointed to this Department as an Administrative Assistant for Ivan, and she now shares Ivan's office on floor 4.

Joel Schiff's third book, on "Cellular Automata: A Discrete View of the World", was published by Wiley and launched on 2007 December 21.

Arkadii Slinko was an invited speaker at two events: The Tenth International Symposium on Artificial Intelligence and Mathematics held at Fort Lauderdale (Florida) on January 2-4; and the NZ-IMA Workshop of the Thematic Programme on Algorithms held at Napier on February 17-22. And he has received the Faculty of Science Distinguished Teaching Award.

Jamie Sneddon was promoted above the Senior Tutor bar; and also he received a jump step, which indicates that he far exceeds the criteria for that grade.

Tom ter Elst has been promoted to Senior Lecturer; and also he received a jump step, which indicates that he far exceeds the criteria for that grade.

At the AMS-NZMS Joint Meeting at VUW on December 12-15, Prof. Marston Conder gave a Plenary Address on "Chirality". Members of this Department (and others) gave the following Contributed Talks:

Prof. Bill Barton, "Revisiting Felix Klein's *Elementary Mathematics from an Advanced Viewpoint*",

Prof. John C. Butcher, "G-symplectic general linear methods",

Prof. Cristian C. Calude (Dept. of Computer Science), "Representation of computable enumerable ϵ–random reals",

Dr Howard S. Cohl and Dr Tom ter Elst, "Fourier expansions of the fundamental solution for powers of the Laplacian in R^n",

Prof. Marston Conder, "Short presentations for the alternating and symmetric groups",

Nick Depree (Light Metals Research Centre), "Mathematical modelling of an annealing furnace",

Prof. David Gauld, "Foliations and non-metrizable manifolds",

Yousaf Habib, "Symplectic methods with transformations",

Emily Harvey, "Complex oscillations in mathematical models of calcium dynamics",

Dr Allison Heard, "Stability of numerical solvers for ordinary differential equations",

Prof. Bakhadyr Khoussainov (Dept. of Computer Science), "Kolmogorov complexity, computable categoricity, and Frasse limits",

Alison Kohout, "An elastic plate model for wave scattering in the Marginal Ice Zone",

Dr Alastair McNaughton, "Loci of zeros in fractional calculus",

Dr Michael Meylan, "Simulation of near-trapping time-dependent water wave problem".

Dr Andre Nies (Dept. of Computer Science), "Borel presentable structures",

Prof. Boris Pavlov, "An ill-posed problem in scattering theory",

Dr Malte A. Peter, "Time-dependent water waves incident on a vertical elastic plate",

Dr Garry J. Tee, "Permutable polynomials and rational functions",

Dr Tom ter Elst, "Does diffusion determine the drum?",

Dr Shayne Waldron, "Tight frames of multivariate orthogonal polynomials",

Inga Wang, "A mathematical model of airway and pulmonary arteriole smooth muscle",

Wen Duan, "Mathematical modeling of GnRH neurons in the rat brain",

Dr Ilze Ziedins (Dept. of Statistics), "Nonmonotonicity of phase transitions in a tree loss network".

Peter Radonich is our Teaching Fellow for 2008. He comes from Birkenhead College and he will join our 102 and 108 teaching teams, as well as teaching the Science Communication course while Bill Barton is away. Neelam Taneja from Randwick Park School (in Manurewa) is a New Zealand Science, Mathematics and Technology Teacher Fellow. Sue Noble (from Parnell College) is a 2008 RSNZ Teacher Fellow. We are very pleased to welcome to the Department Marina McFarland and Anne Blundell, both mathematics teachers at Auckland Girls' Grammar School, who will be with us for the whole of 2008. Marina and Anne both hold Ministry of Education Study Awards, to assist them with completion of their postgraduate programme.

Dr Henrik Bäärnhielm recently completed his PhD at Queen Mary - London, and now he is a post-doctoral fellow in the Department. His interests include group theory and computation.

Dr Daniel Weiss, a numerical analyst from Universität K öln, is here for one year as a post-doctoral fellow under the auspices of the Deutsche Forschungsgemeinschaft.

We congratulate Edward Huang on his receipt of a JSPS Postdoctoral Fellowship. Edward will take up this fellowship in September 2008, following on from his NZ S&T post-doctoral fellowship.

Antonio Politi, who is currently in our Department as a post-doctoral fellow, has won the Reinhart Heinrich Doctoral Thesis Award. That prize is awarded (by the European Society of Mathematical Biology) to the student with the best PhD in Mathematical Biology, across the world. It is very prestigious indeed, and we congratulate Antonio on this wonderful achievement.

Bart Oldeman, who had been a post-doctoral fellow here, came back to assist in teaching for 2007. He gave valuable assistance to the Department, and now he is a post-doctoral fellow at the University of Montréal.

Recent visitors include: Prof. Wolfgang Arendt (University of Ulm), Prof. Peter Bates (Michigan State University), Dr Luke Bennetts (University of Otago), Dr Félicien Bonnefoy (École Centrale Nantes), Prof. Peter Brooksbank (Bucknell University), Prof. Tina Ming-Hua Chan (National Taichung Institute of Technology, Taiwan), Prof. David Jen-Lung Chen (Lin-Tong University of Technology, Taiwan), Prof. Diana Coben (King's College London), Distinguished Professor Robert M. Corless (University of Western Ontario), Dr Diego Dominici (SUNY New Paltz), Prof. Tommy Dreyfus (Tel Aviv University), Prof. Michael Eastwood (University of Adelaide), Prof. Peter Fleischmann (University of Kent at Canterbury), Prof. Maximilian Ganster (Technische Universität Graz), Prof. Jin Ho Kwak (Com2Mac Centre, Postech, Korea), Dr V.Lakshmana Gomathi Nayagam (National Institute of Technology, Tiruchirappalli, India), Dr David Liberles (University of Wyoming),

Prof. Martin Liebeck (Imperial College, London), Prof. Steve Linton (University of St Andrews), Prof. Willard Miller (University of Minnesota), Prof. Robert Raphael (Concordia University, Montreal), Prof. Gary Seitz (University of Oregon), Prof. R. Grant Woods (University of Manitoba).

We are not sure how many Mathematics Departments around the world can boast, as we do, about a Public Lecture series that in 2007 included John Conway, Marcus du Sautoy, Ian Stewart, and Vaughan Jones.

Congratulations to Dominic Searles, who has won a Freemasons NZ Postgraduate Scholarship, on top of his University of Auckland Masters Scholarship. Dominic completed BSc(Hons) in 2007, with First Class Honours in Mathematics and straight A+ grades for his degree. Also he won the Department's Collins Prize in 2007. This year he's writing a Masters thesis in algebra, under the supervision of Arkadii Slinko (main supervisor) and Marston Conder (co-supervisor).

Seminars

Prof. Chris Godsil (University of Waterloo), "Are most graphs determined by their spectrum?".

Prof. Arnoud C.M. van Rooij (Radboud University Nijmegen, Netherlands), "Non-Archimedean analysis".

Prof. Jin Ho Kwak (Com2Mac Centre, Postech, Korea), "Enumeration and distribution of maps on surfaces".

Prof. Melvin Leok (Purdue University, USA), "Lie group and homogeneous variational integrators and their applications to geometric optimal control theory".

Prof. Diego Dominici (Technische Universitaet Berlin / SUNY New Paltz), "Asymptotic analysis of differential-difference equations".

Dr Florina Halasan (University of British Columbia), "Absolutely continuous spectrum for the Anderson model on some graphs".

Dr Uzy Smilansky (Weizmann Institute, Israel), "Can one count the shape of a drum?", and "Mathematical and computational methods in archaeological research".

Dr Howard Cohl , "Fourier expansions of the fundamental solution (Green's functions) for powers of the Laplacian and Helmholtz operators in R^n".

Prof. Willard Miller , (University of Minnesota) "What is separation of variables?".

Prof. Gary Seitz (University of Oregon), "Unipotent and nilpotent elements in algebraic groups".

Prof. Julian West (University of Victoria BC), "Monotone sequence games and coin-jumping"

Prof. Peter Fleischmann (University of Kent at Canterbury) "The transfer and dehomogenized modular invariant rings of finite groups".

Dr Rene Huijsmans (TU Delft), "Mathematical models for hydrodynamic laboratories: How to make them fit".

Prof. Josef Siran (Open University), "Regular maps of a given genus".

Alison Kohout , "Wave Scattering in ice-covered seas"

Dr Isabel Hubard , "Regular and two-orbit polytopes"

Prof. Peter Bates (Michigan State University), "Vortex and aster patterns mediated through molecular motors in families of microtubules".

Prof. Diana Coben (King's College, London), "Burning issues, practical solutions and unanswered questions in adult mathematics education in NZ, UK and elsewhere".

A-Prof. Rod Gover , "Almost-Einstein structures".

A-Prof. Philip Sharp , "Symplectic vs non-symplectic".

Dr. Paul-Andi Nagy , "Symmetry degree from framing".

Dr Steve Linton (University of St Andrews), "Recognizing S_n in its action on k-sets".

Prof. Grant Woods (University of Manitoba) , "A non-realcompact almost-Lindelöf space".

Prof. Wolfgang Arendt (University of Ulm), "The sound of bells, drums and gongs".

Dr Josef Silhan (International School for Advanced Studies, Trieste, and Masaryk Universit), "Differential complexes on conformally Einstein manifolds".

Dr Luke Bennetts (University of Otago), "Wave scattering by ice sheets of variable thickness".

Prof. David Gauld , "Non-Hausdorffmanifolds".

Prof. John Butcher , "Numerical methods for dissipative and Hamiltonian problems".

Garry J. Tee

DEPARTMENT OF STATISICS

The department is delighted to congratulate Chris Wild FRSNZ on his election as a Fellow of the Royal Society of New Zealand in November, for his 'very significant contributions to both statistical methodology and statistical education'. Chris is our third FRSNZ, with Alastair Scott and George Seber. Congratulations Chris on this richly deserved achievement!

Meanwhile, the mantle of Head of Department passed from Alan Lee to Chris Triggs, who was instituted in a Departmental coronation ceremony in February. Coronation regalia befitting of the occasion failed to gain budget approval, but a cardboard Burger King crown was found to suffice. Welcome to the job, Chris, and our thanks to Alan Lee for heading the Department through 2007.

The Department celebrated a scoop of 3 Marsden awards in September. Marti Anderson gained an $800,000 grant to explore underwater ecosystems on the Lord Howe Rise seamount using underwater submersibles. The submersibles go down to a massive 1000m, where the ocean is dark, scary, and full of unknowns. Marti's project will be among the first to use manned (or even womanned) submersibles in the southern hemisphere. Not surprisingly, there was a huge response to Marti's advert for 2 PhD students, with a total of 183 applicants from around the world. Readers will be delighted to hear that the best 2 applicants were both Kiwis, and Adam Smith and Kirsten Rodgers will be starting on the project soon.

Also in the Marsden round, Yong Wang and Sharon Browning both gained Fast Start grants. Yong's grant aims to develop his algorithms for fast computation for fitting mixture models, and Sharon's covers new methodology for determining the genetic contributions to disease.

Renate Meyer won a university postdoctoral research grant for the prediction of climate change impacts on marine ecosystems. Postdoc Moritz Lehmann from Dalhousie University will arrive in June to work on the project.

Our new lecturer Stephane Guindon, appointed last year, has achieved a rare honour: his article with Olivier Gascuel, 'A simple, fast and accurate algorithm to estimate large phylogenies by maximum likelihood', published in "Systematic Biology" in 2003, has topped 1000 citations! Fewer than 25 scientific articles published since 2003 have been cited 1000 times or more. (How many of these 25 have the word 'simple' in the title remains unknown.) Stephane's algorithm is implemented in the software PhyML. Citations are still rolling in, and this morning's total was 1026 and counting ...

Three of our completing PhD students have gained prestigious postdoctoral positions around the world. Christian Roever and James Russell successfully defended their theses last year. Christian has now taken up a postdoctoral fellowship at the Max-Planck Institute for Gravitational Physics (Albert Einstein Institute) in Hannover, Germany. James is basking in the tropical sun on Reunion Island in the Indian Ocean, where he is studying the impacts of invasive mammals on seabirds. His ambition is to be the first to find the nesting site of the near-extinct and almost never-seen Mascarene petrel. Steven Miller, who has just submitted his thesis, has taken up a postdoctoral appointment at Trinity College Dublin, studying the movements of ancient peoples through Europe using genetic, linguistic, and archaeological data.

Our current PhD students have also been busy. Lyndon Walker's research on inter-ethnic cohabitation was featured in the New Zealand Herald in December with the intriguing title 'Maori mix up love lives'. Radio interviews on Radio Waatea and Radio PI followed. Particular interest was generated by the decrease in the proportion of Maori people who live with a Maori partner.

Jenny Wilcock won the Early Career prize for best oral presentation at the Biometrics Australasian Regional Conference in Coffs Harbour in December. Also at the conference were invited speakers Russell Millar and Nick Horton, who is visiting the Department from Smith College, Massachusetts. Nick has already made stellar contributions to Department life, including an excellent talk on statistical education backed up with stunning culinary hospitality. He will not be allowed home if he produces another dinner like this week's welcome for the Longitudinal Data Analysis workshop participants!

Seminars

Dr Kevin Bleakley (Institut de Mathmatiques et de Modlisation de Montpellier), "Mathematical learning: A powerful bridge between different fields of mathematics and statistics. Applications in biological network prediction"

Dr Gareth James (USC), "The Lasso".

Prof. J. Martin Bland (University of York), "The Tyranny of Power".

Yilin Jia , "Bayesian Modelling for Ecological Count Data".

Dr. Deborah Donnell (Fred Hutchinson Cancer Research Center, Seattle), "Four Case Studies in non-vaccine HIV Prevention Trial Design".

Dr. Nicholas J. Horton (Department of Mathematics and Statistics, Smith College, and Department of Statistics, University of Auckland), "Much ado about nothing: a review of the state of the art of incomplete data"

Rachel Fewster

UNIVERSITY OF CANTERBURY

DEPARTMENT OF MATHEMATICS AND STATISTICS

Postdoc Bhalchandra Thatte from the Biomathematics research group has been awarded a 2-year postdoc by Oxford University (Statistics) to work on pedigree reconstruction to commence in August. Bhalchandra is currently in Budapest at the Renyi Institute, and will be joined there by some others in the biomath group — including our PhD students Beata Faller and Mareike Fischer — in June for a conference on Bayesian approaches in phylogenetics. Mike Steel is off to the Sante Fe Institute in April for a workshop on HIV evolution, and will deliver a Neyman seminar to statisticians at Berkeley on the way.

Several biomathematicians attended the 12th annual phylogenetics conference *Whitianga '08* in February. Mike Steel, Charles Semple, Raaz Sainudiin, Bhalchandra Thatte, Klaas Hartmann, Mareike Fisher and Beata Faller all gave talks. Next year's conference will be held in Kaikoura and will coincide with the 200th birthday of Charles Darwin on 12 February. Immediately afterwards the Allan Wilson Centre will run an international conference *BioEd* in Christchurch, aimed at secondary school teachers.

It has been a busy summer for conferences. Ben Martin organised one on Finite Groups and Representations from January 14–18 at the university's field station in Kaikoura. The theme of the conference was theoretical and computational aspects of finite groups, algebraic groups and related algebras. Twenty-six people attended from New Zealand, Australia, Europe and the US. The overseas visitors were very impressed during the conference dinner by a sudden southerly squall, which threatened to blow away wine glasses, plates and small babies, but most of the time the weather was excellent: two people climbed Mt Fyffe on the rest day, while others contented themselves with more leisurely pursuits such as whale-watching, walking around the peninsula or just hanging out in local cafes. The conference was supported by money from the Marsden Fund, NZIMA and the Mathematics & Statistics Department.

Together with Mike Atkinson (University of Otago) and Mark Wilson (University of Auckland), Charles Semple organized a week-long meeting on Algorithmics in Napier in February. The meeting is part of the NZIMA-funded thematic programme on Algorithmics. Topics ranged from computational algebra to computational biology and from theoretical underpinnings to practical solutions and supercomputers. (Many of the talks are available on the programme's website.) The department was well represented by our postgraduate students Josh Collins, Beata Faller, Miriam Hodge, Peter Humphries, Michael Snook, Gloria Teng and frequent German student visitors Tanja Gernhard and Simone Linz.

In addition to the Napier meeting, a number of other activities are planned including a more focused and tutorial-like meeting to be held in Kaikoura in July and a series of public lectures by prominent popular science author Professor David Harel later in the year. For further details of the progamme, see http://www.cs.otago.ac.nz/algorithmics/home/.

Raaz Sainudiin gave a talk at the 10th Annual Molecular Ecology conference in Kaikoura in December. Mike Plank and Alex James spoke at the NZ Workshop on Biomedical Problems in Dunedin in December, Clemency Montelle at the Joint Math Meeting in San Diego in December, Mark Hickman at the NZMRI summer meeting in Nelson in January, Mike Plank at ANZIAM in Katoomba in February and at the SIZEMIC Workshop on Trophic Dynamics in Cambridge in April, Rua Murray at the AMSI Mini-Symposium on Entropy Methods in Melbourne in December, Günter Steinke at the 32nd Australasian Conference on Combinatorial Mathematics in Dunedin in December, Clemency Montelle and Neil Watson at the NZ-AMS Joint Meeting in December and Bill Rea at the Econometric Study Group Meeting in Auckland in March.

While some were inside giving talks or listening to them, others were out getting some gentle exercise. David Wall and Alex James took part as a team in the two-day event in the Coast-to-Coast race in February. Months of hard training paid off and they finished a respectable 14th in their sec-

tion. David has now competed five times in the race since 1984; he last took part eighteen(!) years ago.

Irene David's position of Senior Tutor has been upgraded from fixed term to continuing. Jennifer Brown and Charles Semple were promoted to Associate Professor, Douglas Bridges was awarded a promotion within the professorial scale, and Alex James and Ben Martin were awarded double increments.

Congratulations to Jennifer Brown, who was awarded a grant from the Geospatial Research Centre, and to Peter Humphries, who won the Aitken prize for best student presentation at the NZMS-AMS Joint Meeting in December. Congratulations also to Paul Brouwers, who has got engaged to his partner Angela Knibbs. Andrew Richens has submitted his MSc Statistics thesis, which was supervised by Dominic Lee.

Recent visitors include: Dr Michael Bate (Oxford), Prof Lisa Carbone (Rutgers), Prof Konstantin Mischaikow (Rutgers), Dr Simon Goodwin (Birmingham), Tanja Gernhard (Munich Technical University), Prof Helmut Schwichtenberg (Munich), Dr Robin Havea (University of the South Pacific), Prof Angus MacIntyre (Queen Mary London), Dr Beatrice Pelloni (Reading), Dr Mike Bartholomew-Biggs (Hertfordshire), Simone Linz (Düsseldorf), Prof Dominic Welsh (Oxford).

Seminars

Prof Konstantin Mischaikow (Rutgers University), "A database for the global dynamics of multi-parameter systems"

Prof Michael Powell (University of Cambridge), "A review of the convergence of trust region methods for unconstrained optimization"

Professor Tim David (Canterbury), "Modelling blood flow in the brain"

Prof Helmut Schwichtenberg (University of Munich), "Logic of inductive definitions"

Dr Tim Robinson (University of Wyoming), "Illustrating the utility of a Bayesian analysis for split-plot experiments with non-normal responses"

Dr Mike Bartholomew-Biggs (University of Hertfordshire), "Adventures in global optimization"

Dr Mike Bartholomew-Biggs (University of Hertfordshire), "Traversing non-convex regions"

Prof Angus MacIntyre (Queen Mary London), "Solving equations involving real and complex exponentials, and the connection to transcendental number theory"

Prof Ray Chambers (University of Wollongong), "Small area estimation via M-quantile geographically weighted regression"

Dr Beatrice Pelloni (University of Reading), "Fourier transforms revisited, and applications to boundary value problems"

Prof Dominique Guegan (Université Paris Panthéon-Sorbonne), "The k-factor Gegenbauer Asymmetric Power GARCH approach for modelling electricity spot price dynamics"

Dr Mike Bartholomew-Biggs (University of Hertfordshire), "Uneasy relations — mathematics in poetry"

Ben Martin

MASSEY UNIVERSITY

INSTITUTE OF FUNDAMENTAL SCIENCES (PALMERSTON NORTH)

The 1st Joint International Meeting between the American Mathematical Society and the New Zealand Mathematical Society, held December 12 15, 2007 and hosted by Victoria University of Wellington was attended by most mathematicians from the PN Campus. The absentees (Christine Burr, Peter Kelly and Marijcke Vlieg-Hulstman) were busy with three S3 extramural papers and Bruce van Brunt had other matters to attend to.

The statisticians are now part of the Institute of Fundamental Sciences. They are still housed in a different building but join us once a week for morning tea.

Bruce van Brunt attended the 2008 NZMRI Conference on Conformal Geometry: Summer Workshop on Conformal Geometry and Geometric Approaches to PDE's, held January 6 12, at Nelson.

Barbara Holland attended the Annual New Zealand Phylogenetics Meeting held Sunday 10 Feb - Friday 15 February, 2008 in Whitianga.

Robert McLachlan went to ANZIAM 2008 at Katoomba in the Blue Mountains. The venue was a marvellous old Victorian hotel with champagne buckets under the leaks - it rained every day. There was a brilliant roster of invited speakers - he should know, he was on the committee. ANZIAM has apparently received a bequest of A$0.5m so this could be a good time to join.

Barbara Holland spent 3 weeks in March visiting Peter Jarvis in the Math/Physics Department at the University of Tasmania, Hobart. Peter Jarvis and his former PhD student Jeremy Sumner have discovered an interesting application of the mathematics of entanglement, which is used in quantum physics, to the mathematics of evolution. Barbara then travelled to Adelaide where she was a keynote speaker at the inaugural Adelaide Conference on Mathematical Evolutionary Biology. This new conference series is being organised in the hope of stimulating cross-disciplinary research between mathematicians and biologists, following the successful model of the annual New Zealand Phylogenetics workshop.

Luke Fullard has joint us as a Graduate Assistant. He will do a PhD in Mathematical Modelling supervised by Tammy Smith.

Seminars

Professor Laurent Jay (University of Iowa), "Butcher trees and curve search in nonlinear optimization".

Dr Will Wright (Department of Mathematical and Statistical Sciences La Trobe University, Australia) "The scaling and squaring technique for matrices related to the exponential".

Professor Brynjulf Owren (Norwegian University of Science and Technology, Trondheim, Norway), "Numerics, Renormalization, Noncommutative Geometry it's an ART".

Marijcke Vlieg-Hulstman

INSTITUTE OF INFORMATION AND MATHEMATICAL SCIENCES (ALBANY)

Several of us participated in the 1st Joint Meeting of the American Mathematical Society and the New Zealand Mathematical Society in Wellington, December 12-15. The following talks were given by members of IIMS:

Carlo Laing, "Bumps and Rings in a Two-Dimensional Neural Field: Splitting and Rotational Instabilities".

Graeme Wake, "Modelling of Cancer Treatment".

Graeme Wake, "Spectral Properties of non-Local Eigenvalue Problems".

Alona Ben-Tal, "Modelling Cheyne-Stokes Respiration and Other Aspects of the Control of Respiration".

Winston Sweatman, "Full Ionisation in Binary-Binary Encounters at High Velocity".

Ratneesh Suri, "A real Options Approach to Fisheries".

Robert McKibbin, "Modelling Turbulent Dispersion of Pollen in a Forest Canopy".

Kevin Byard, "Qualified Residue Difference Sets from Unions of Cyclotomic Classes".

Heung Yeung (Frederick) Lam, "Sixteen Eisenstein series"

Gaven Martin gave a plenary talk: "Curvature and Dynamics".

Ratneesh Suri (PhD student, supervised by Tasos Tsoularis and Robert McKibbin) has won the Aitken Prize, awarded for the best student presentation. This continues a fine tradition amongst Massey students (Kevin Byard took the award in 2006, Amanda Elvin in 2005, Jo Mann in 2004 and Cynthia Wang in 2003). Congratulations Ratneesh!

In December Carlo Laing gave an invited presentation with the title "Coarse-graining: a neural example" at a Mathematical and Computational Nanoscience meeting in Wellington.

Graeme Wake was an invited participant in the "Mathematics in Medicine Study Group", held in the Pharmacy School of the University of Otago in Dunedin. The meeting was organised as a satellite meeting to the AMS/NZMS meeting and financially under-written by the NSF in the US. There were 45 participants and four problems were presented by the Otago Medical School. Graeme who was a moderator for a problem on wound healing, reports that: "The problems were stimulating and amenable to mathematical and computational analysis. Progress was made on all four problems."

In February, several of us participated in ANZIAM 2008 which took place at Katoomba, New South Wales. The following members of IIMS gave talks at ANZIAM:

Carlo Laing, "A low-dimensional description of a heterogeneous network of coupled oscillators".
Winston Sweatman, "Full ionisation in four-body encounters between binary stars".

Graeme Wake, "A model for phenotype change in a stochastic framework".

Sharleen Harper, "A model for the transport of drifting spray droplets losing mass by evaporation the search for an analytic solution".

Joanne Mann, "Modelling the epidemiology of hepatitis B virus".

Mick Roberts gave an invited talk: "The evolution and transmission of a virus".

At the meeting, Carlo Laing won the J.H. Michell Medal, awarded for outstanding new researchers by ANZIAM. He is the first NZ based person to do so. Congratulations Carlo! Sharleen Harper gained an Honourable Mention (five in all were given) in the Cherry Prize for the best student talk. Graeme Wake who was the Chair of the student Cherry Prize Committee reports: "there were 35 student talks, all delivered with a very high standard". Sharleen won the prize last year. Well done Sharleen!

In January and February, Winston Sweatman spent just under three weeks in Australia. Starting at the Mathematics in Industry Study Group (MISG08) in Wollongong, he was a moderator for the NZ Steel project: "Cold-point determination in heat-treated steel coils". He then spent a week at ANZIAM08 in Katoomba followed by another week at the Australian Defence Force Academy, University of New South Wales, in Canberra, where he continued a collaborative work with Geoff Mercer, Steve Barry and Zlatko Jovanoski. During his visit to UNSW@ADFA, Winston presented a Physics and Mathematics Seminar: "Encounters of binary stars that lead to mutual destruction". During the weekends in between these activities, Winston reached the summits of two mountains that he has wished to ascend for a number of years: Mt Solitary in the Blue Mountains and Mt Kosciuszko in the Snowy Mountains.

Alona Ben-Tal was one of the main organisers of a workshop on multi-scale modelling of the respiratory system. The workshop took place at the University of Auckland's Conference Centre from 19 February to 22 February and attracted about 50 people from 8 countries. The workshop had 4 prominent plenary speakers from the USA (each spoke for 50 min), 20 contributed talks (25 min each) and 15 posters (presented in two dedicated sessions). Other people on the local organising committee were: Merryn Tawhai from the Bioengineering Institute, James Sneyd and Mark McGuinness (responsible for several photos elsewhere in this Newsletter). The workshop was very successful in every aspect and attracted sponsorship from Fisher & Paykel Healthcare, Philips Medical, The Maurice & Phyllis Paykel Trust, NZIMA, IIMS, The Bioengineering Institute and The University of Auckland. At the workshop Alona presented a poster entitled "Studying the control of breathing in mammals by coupling neural dynamics to peripheral gas exchange and transport" and Carlo Laing presented a poster entitled "A low-dimensional description of heterogeneous network of coupled oscillators".

Mick Roberts gave an invited talk "Modelling the control of influenza outbreaks" at a meeting on "Seasonal and Pandemic Influenza: Surveillance, Control and Research" in Wellington School of Medicine and Health Sciences on 21 February.

Paul Cowpertwait attended a conference of the NZ Hydrological Society on "Water and Land" in Rotorua (20-23 November, 2007) and gave the paper "Developments of fine scale structure for point process models of rainfall" (co-authored by Valerie Isham and Christian Onof, London).

Congratulations to Weiwei Luo who has been recommended for the award of her PhD in Mathematics subject to some emendations. Her thesis is entitled: "Numerical determination of critical conditions for thermal ignition". Weiwei was co-supervised by Graeme Wake (IIMS) and Clark Hawk of UAH in Alabama, US, where she and her family now live. Sadly Professor Hawk passed away in February and did not live to see the successful outcome. Weiwei was one of the top students to graduate from IIMS earlier this decade with joint first-class honours in Computer Science and Mathematics, which enabled her to win a Massey University Vice-Chancellor's Postgraduate Scholarship. She initially enrolled in a PhD in Computer Science but switched to a topic in Computational Applied Mathematics a year later. She is planning to stay in the US.

We have been given permission to advertise the Chair in Statistics made vacant by the retirement of Jeff Hunter. For details go to http://jobs.massey.ac.nz/positiondetail.asp?p=5187 or contact Professor Tony Norris, Head of the Institute of Information & Mathematical Sciences (phone +64 9 414 0800 ext. 41040) or email T.Norris@massey.ac.nz

Visitors:

Mr Peter Jaques, Head of Mathematics at Takapuna Grammar School, is taking up his RSNZ Secondary Teachers' Fellowship for 2008 in IIMS. Peter will be working in part with the Centre for Mathematics in Industry and will interact widely across our groupings. He also wants to pursue a project on road crash victim statistics.

Dr Jeffery Smith from the National Institutes of Health, USA, visited us for a week and worked with Alona Ben-Tal. Following his visit at IIMS, Jeff

participated and gave a plenary talk at the Workshop on Multi-scale Modelling of the Respiratory System at the University of Auckland.

Professor Andreas Dress visited us for one day. Andreas is a co-Director of the Partner Institute between the German Max Planck Institute and the Chinese Academy of Sciences in Computational Biology, which is based in Shanghai.

Six summer students in math and stats that have been working with Alona Ben-Tal, Carlo Laing, Robert McKibbin, Mick Roberts and Beatrix Jones, have completed their projects in mid February. Three of the summer students (Jonathan Harris, Hyukjoon Kang and Laura Bear) also participated and helped at the Workshop on Multi-scale Modelling of the Respiratory System.

Seminars

Lars Hinke (Institute of Sound and Vibration Research, University of Southampton, UK), "Modelling Product Variability and Data Uncertainty in Structural Dynamics Engineering"

James Sneyd (The University of Auckland), "Calcium Oscillations: Using Mathematics to do Physiology".

Carlo Laing (IIMS), "Dimension Reduction in Complex Models".

Weiwei Luo (IIMS), "Numerical Determination of Critical Conditions for Thermal Ignition".

Alona Ben-Tal

NIWA

Aroon Parshotam presented a seminar in February to post-graduate (Masterates and PhD) students in dynamical systems modelling at the faculty of Science, Mahidol University, Thailand. This seminar covered sediment generation in land systems in New Zealand, and a discussion on dynamical systems modelling, in general.

Aroon Parshotam

UNIVERSITY OF OTAGO

DEPARTMENT OF MATHEMATICS AND STATISTICS

We welcome a new Head of Department and two new staff members.

Richard Barker, Professor of Statistics, has taken over as Head of Department from Derek Holton from 1 February. We are looking forward to Richard providing the kind of academic leadership for the whole department that he has already shown on behalf of the Statistics group.

Jörg Frauendiener took up the position of Professor of Applied Mathematics in December 2007 (see 'New Colleagues' section). Jörg came from the Department of Physics at the Institute for Astronomy and Astrophysics at the University of Tübingen in Germany. Everyone in the Department looks up to him — literally — he is very tall!

Dr Chris Fonnesbeck came to the Department from Fish & Wildlife Research Institute (FWRI), the research branch of the Florida Fish Wildlife Conservation Commission and the University of Georgia, Athens, GA to the Statistics Lectureship position vacated by Richard Barker. (Please see 'New Colleagues' section.) Chris is a Canadian national and has adapted to his new role with ease. He can also be seen out running with other Department runners most lunch times.

Department staff were shocked to learn that on 26 January, Warren Palmer, Organising Tutor, NBJMC Coordinator and PhD student, had a severe stroke which almost completely paralysed him. However, just two months later, with true indomitable spirit, Warren is now moving one arm and hand and using a laptop. We look forward to seeing Warren back in the Department, hopefully in the not too distant future.

Richard Barker had the unenviable task of visiting Hawaii to run a short course on Bayesian inference for ecologists based in Hawaii. This was followed by a week working with Bill Link on their book on Bayesian Inference due for completion at the end of the year. Thanks to some solicited data they are able to add to their list of examples, "Cannabis use among pacific ecologists".

Visitors

Dr David Anderson of Colorado State University is the William Evans Visiting Fellow in Statistics during February and March. David has worked in the area of quantitative ecology for the past 40 years. Since 1990 he researched model selection approaches based on Kullback-Leibler information and this has led to a monograph and two books on the subject. His newest book, "Model Based Inference in the Life Sciences: A Primer on Evidence" was published late last year. David is interested in introducing some new concepts into both undergraduate and graduate courses and ran a very successful short-course entitled 'True Models in Model Selection' that was well attended by Zoologists and

Statisticians. Several seminars and many discussions with staff in other departments as well as Mathematics and Statistics made it a very interesting and valuable visit.

John Rossi from Virginia Tech visited Peter Fenton January-February 2008, to continue work related to the Denjoy-Ahlfors theorem begun during Peter's leave at Virginia Tech in the second half of 2007.

Seminars

Dr Yorick Hardy (Department of Applied Mathematics, University of Johannesburg), "Quantum Computation"

Dr Ishwaree Neupane (Department of Physics & Astronomy, University of Canterbury), "Prospective on Nature's Greatest Puzzles"

Dr Domenico Giulini (Max-Planck-Institute for Gravitational Physics, Albert-Einstein-Institute, Germany), "On Doppler Tracking in Cosmological Spacetimes"

M I Stessin (SUNY at Albany), "Algebras generated by two inner functions"

Robert Aldred "Squeezing a bit more out of matching extensions"

Professor Jimmie Lawson (Louisiana State University), "Extending geometric means to positive matrices"

Professor David Anderson (Colorado State University), "True models in model selection"

Derek Holton "Where have all the mathematicians gone?"

Richard Barker "Coming Out: Confessions of a Closet Frequentist"

Victor Czinner (Kyoto University and MTA KFKI, Research Institute for Particle and Nuclear Physics, Hungary), "Topological phase transitions in brane black hole systems"

Raymond Chambers (Wollongong University), "Measurement Error in Auxiliary Information"

Lenette Grant

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS

Just before the start of Semester A, a function was held for Alfred Sneyd to mark his retirement. As indicated in the Waikato column of the previous Newsletter, he has been at the University of Waikato for 38 years. So numerous people turned out for the occasion. He is still involved with the life of the department; besides teaching a graduate course this year, he is supervising a PhD student.

Ernie Kalnins is the new Chairperson of Department, but just until the end of June. At the moment there is no keen successor in sight! Ernie went to the annual NZMRI Summer meeting which was held in Nelson. People visiting Ernie after this meeting were Willard Miller Jr from the University of Minnesota for two weeks and Jonathan Kress from the University of New South Wales for a week. Ernie has just left for a two week trip to Russia and will be back in early April. Another visitor was Yuri Litvinenko from the University of New Hampshire who collaborated with Ian Craig.

Kevin Broughan attended the 11th Devonport Topology Festival. This year the festival was held in honour of Ivan Reilly. Photos from this event are available from Kevin's webpage at http://www.math.waikato.ac.nz/∼kab/ivan.html

Vasile Sinescu has just successfully passed the oral examination for his PhD. His thesis had the title "Construction of lattice rules for multiple integration based on a weighted discrepancy". He was supervised by Stephen Joe and Rua Murray.

In terms of replacements for Alfred and Rua, an offer of a position in applied mathematics has already been made. Interviews for the position in pure mathematics will be completed by early April. More definite information about the two new staff members is expected to be available in the next issue of this Newsletter.

So the department is currently looking a bit low in staff members. Fortunately, we have Keith Allen working as a part-time senior tutor this year to help us cover this temporary staffing shortfall. This shortfall has not been helped by Stephen taking on the role of Acting Dean of the School of Computing and Mathematical Sciences at the start of February. Stephen is in this role until the end of June unless a new Dean is appointed before then, but currently this latter scenario seems unlikely. Like Chairpersons of Department, Deans are hard to come by as well!

Stephen Joe

VICTORIA UNIVERSITY OF WELLINGTON

SCHOOL OF MATHEMATICS, STATISTICS AND COMPUTER SCIENCE, *Te Kura Tatau*

Mathematics

The School was delighted to host the First Joint Meeting of the American and New Zealand Mathematical Societies from 12-15 December 2007. The meeting was one of the largest mathematical conferences ever held in New Zealand with close to 300 delegates and 250 talks. Di McCarthy, CEO of RSNZ and US Ambassador Bill McCormick opened the meeting and the first plenary address was given by Fields medallist Mike Freedman. Local organisers were Peter Donelan, Rod Downey, Noam Greenberg, Dillon Mayhew and Ginny Whatarau. A report on the meeting appears elsewhere in the newsletter.

Our School Manager Ginny Whatarau and her husband Rick have celebrated the happy arrival of their daughter, Janayah, on 19 March 2008. Janayah is doing well and her mum says she is "getting used to waking up three times during the night". In Ginny's absence, Rowan McCaffery is the acting School Manager.

As mentioned briefly in the December 2007 Newsletter, Rod Downey has been made a 2007 Fellow of the ACM (Association for Computing Machinery) for contributions to computability and complexity theory. The 2007 ACM Fellows, from the world's leading universities, industries, and research labs, created innovations in a range of computing disciplines that affect theory and practice, education and entertainment, industry and commerce. Outside of North America, the only universities with 2007 ACM Fellows are Victoria University, Oxford University, the University of Edinburgh, cole Polytechnique Fdrale de Lausanne (EPFL) in Switzerland and the University of Madeira. Rod is only the second New Zealander to be recognised in such a way.

Rob Goldblatt was an invited speaker at a *Workshop on Coalgebraic Logic*, held in Oxford in August 2007. This was a satellite of the conference *Algebraic and Topological Methods for Non-Classical Logics III*, to which Rob also contributed a paper. Later in September he gave an invited address to the annual *British Logic Colloquium*, held at the LMS headquarters in De Morgan House, London. In between those conferences Rob made an heroic effort to help his employer manage its annual-leave budget deficit by taking a walking holiday in the Umbria region of Italy. In January Rob hosted a visit by Prof Hiroakira Ono, Vice-President of the Japan Advanced Institute of Science and Technology.

Some alumni news concerns Young Hong, who has recently accepted a permanent research position at the Wolfson Brain Imaging Centre (http://www.wbic.cam.ac.uk) at the University of Cambridge in the UK, as a kinetic modeller. The Wolfson Centre is dedicated to imaging function in the injured human brain using Positron Emission Tomography and Magnetic Resonance. Young finished his PhD in Mathematics in 2005 at this School, under the supervision of A/Prof Mark McGuinness, on "Cardiac Control Models".

Mark McGuinness has been to the Maths in Industry Study Group in Wollongong in January, where he was a Moderator for the NZ Steel problem on heating steel coils, to the ANZIAM meeting in the beautiful Blue Mountains west of Sydney in February, and to the excellent workshop on multiscale modelling of the respiratory system in Auckland later in February. Now it is nice to be back home for a change.

Currently, Mathematics has 12 PhD students, seven of whom started in 2008. They all have scholarships. Adam Day was awarded a Top Achiever Doctoral Scholarship from the Tertiary Education Commission (TEC), to work with Rod Downey on topics in randomness. Nicole Walters has been awarded an Enterprise Scholarship under the TEC's Bright Futures scheme. The fully funded PhD scholarship will enable Nicole to work on the upflow of steam and liquid and noncondensible gasses in geothermal wellbores, under the supervision of Mark McGuinness. This award is in partnership with Mighty River Power.

Statistics and Operations Research

As foreshadowed in the August 2007 Newsletter, we have welcomed the arrival of a new Consulting Statistician: Nokuthaba Sibanda. Nokuthaba landed in Wellington in mid September 2007, coming from London, where she did her PhD at Imperial College on the mapping of quantitative trait loci using Bayesian MCMC methods. She later worked as a Research Fellow at the London School of Hygiene and Tropical Medicine. In addition to statistical genetic mapping, her research interests include the use of statistical process control methods in monitoring surgical and other healthcare outcomes. Since arriving, Nokuthaba has settled in well and has been kept pretty busy fielding consulting requests. Also, Nokuthaba's son is now attending the same nearby school as Ivy Liu's twins, John Haywood's daughter and PhD

student Haizhen Wu's son; more probable than it first sounds, perhaps, but still an interesting 'local cluster'.

Everyone in Statistics and Operations Research is now back from their recent sabbaticals, with John Haywood returning first in December 2007, in time for Helen to start school just as she turned five. Helen thinks school is great, despite (not because of, really!) a long summer break after her first two weeks at school. Richard Arnold came home in mid-February 2008, having spent three months at Waseda University (Tokyo) visiting former colleague Yu Hayakawa, then four months in Seattle at the University of Washington, visiting Jon Wakefield in the Department of Biostatistics. Richard spent this time working on MCMC estimation in capture-recapture modelling. Yu Hayakawa made a return two-week visit in late-February to VUW to work jointly with Richard and Stefanka Chukova. We also enjoyed a return visit from Nokuthaba's Consulting Statistician predecessor, Colleen Kelly, who was in Wellington for almost a week in mid March.

Estate Khmaladze returned to Victoria at the end of January 2008 after a busy time away. On his way to Europe in July 2007 Estate gave two seminar talks in Sydney, to Mathematics and Statistics departments separately. Then in September he was an invited speaker at the 14th Workshop on Stochastic Geometry, Stereology and Image Analysis in Neudietendorf (near Erfurt), Germany. Estate was speaking on the differentiation of set-valued functions, and gained the impression that geometers and image analysts will certainly use such techniques in an enormous variety of applications. In October Estate gave a public presentation to the Georgian Mathematical Society and was also made a Doctor of Business Honoris Causa by the Georgian-American University in Tbilisi. Estate then spent two weeks in Karlsruhe in active discussion with three German professors of geometry and stochastic geometry. Towards the end of his sabbatical, Estate was an invited speaker at the Platinum Jubilee Conference of the Indian Statistical Institute in Kolkata and at a second conference in Hyderabad. He then spent some time in South Indian jungles, riding elephants and living on a boat, before giving a series of linked presentations over three weeks at Hong Kong Baptist University, on Change-set problems, random tessellations, and set-valued analysis.

Although not on sabbatical, Dong Wang recently spent time in both Beijing and Melbourne, returning to VUW at the start of Trimester 1. Similarly, Stefanka Chukova was travelling and visited the US over the NZ summer. Stefanka has great news about her new grand daughter, Kara Whitney Battestilli, who was born on 12 December 2007 and is a very happy, peaceful baby. Stefanka also visited Professor Harry Perros at North Carolina State University, where they made some initial progress on a new joint research project related to service science.

David Vere-Jones has been busy recently, as one of the Organising Committee of the February 2008 Evison Symposium held at VUW to commemorate the contribution of Frank Evison (former Professor of Geophysics at VUW) to earthquake forecasting and related fields. Further details are available on the Evison Symposium website: http://www.gns.cri.nz/evisonsymposium/

David notes that there is some focus on statistical seismology because of its growing role in the development and assessment of time-varying estimates of earthquake risk. In conjunction with the Evison Symposium, a raft of friends and visitors came to Wellington: Yosi Ogata, Jiancang Zhuang and Takai Iwata, all currently based in Japan, Yan Kagan, David Jackson and others from the USA, Annemarie Christofferson, Stefan Wiemer and others from Europe. In addition, two younger [so DVJ wrote ...] visitors are spending three months working with the joint Stats/Geophysics Group at VUW. They are Katerina Orfanogiannaki from Athens (hidden Markov models) and Abigail Jimenez from Spain via Canada (cellular automata and other models for self-organizing criticality). The Evison Symposium was partly supported by the Earthquake Commission (EQC), which is also backing a proposal to set up a testing centre in NZ (one of only three internationally) for evaluating probability forecasts for earthquakes. David also noted that, "finally, Vol 2 of Daley and Vere-Jones has actually appeared, and is definitely the LAST of these efforts!" For more details, see: Daley, D.J., Vere-Jones, D., An Introduction to the Theory of Point Processes, Volume II: General Theory and Structure, Springer, 2nd ed. (2008), 573 pages.

Seminars

Colin McMurtrie and Timothy David , "An Introduction to UC's BlueFern Supercomputing Services"

Colin McMurtrie and Timothy David , "Technical Aspects of UC's BlueFern Supercomputing Services"

Sergio Hernandez (VUW), "Bayesian Methodology for Estimating System States in a Non-stationary Environment when the Dimensionality of the Model is Changing"

Jeffrey Parsons , (Memorial University of Newfoundland, Canada), "Using Cognitive Principles to Identify and Evaluate Classes in Systems Analysis and Design"

Anne Wein (USGS), "Analysis of improved government geological map information for mineral exploration: Incorporating efficiency, productivity, effectiveness, and risk considerations"

John Lewis (Weta Digital), "Data-driven Modeling for Entertainment Applications"

Matthew Jackson (Lawrence University, USA), "Integration and differentiation in an elementary topos"

Jan Bulla (VUW), "hsmm – an R Package for Analyzing Hidden Semi-Markov Models"

Rene Doursat , "Architectures That Are Self-Organized and Complex: From Morphogenesis to Engineering"

Jonathan Kirby (University of Oxford), "Complex exponentiation and pseudo-exponentiation"

Aaron Williams , "Gray Codes and Algorithms for Generalizations of Balanced Parentheses"

Wenjian Cai , "Modeling, Optimization and Control of HVAC Systems for Energy Efficiency"

Graham Leedham , "Handwriting analysis and hand vein imaging for biometric identification"

Martin Bland (University of York), "The Tyranny of Power"

Michael Tuite (National University of Ireland, Galway), "Exceptional Lie and finite groups in vertex operator algebras"

Estate Khmaladze (VUW), "On nonparametric confidence bounds for tails and remaining life"

Ray Chambers (University of Wollongong, Australia and NZSA Visiting Lecturer for 2008), "Maximum likelihood under informative sampling"

Peter Cameron (School of Mathematical Sciences at Queen Mary, University of London), "The Random Graph"

Peter Cameron (School of Mathematical Sciences at Queen Mary, University of London), "Oligomorphic permutation groups".

John Haywood

WELLINGTON STATISTICS GROUP

The Wellington Statistics Group (WSG), a local group of the New Zealand Statistical Association (NZSA), continues to meet regularly. Since September 2007 there have been eight talks given to WSG, with a ninth coming up before the end of April, as follows:

23 Apr 2008, Nicholas Horton, Smith College, Northampton MA, USA 3 Apr 2008, Ray Chambers, University of Wollongong, Australia and NZSA Visiting Lecturer for 2008 18 Mar 2008, Jiancang Zhuang, Institute of Statistical Mathematics, Tokyo, Japan 4 Mar 2008, Martin Bland, University of York, UK 7 Feb 2008, John Lewis, Weta Digital 4 Dec 2007, I-Ming Liu, Victoria University of Wellington 20 Nov 2007, Mike Camden and Paul Cowie, Statistics NZ 24 Oct 2007, Jim Renwick, NIWA 18 Sep 2007, Peter Thomson, Statistics Research Associates

Further details of these and all previous talks can be found on the NZSA Local Groups web page (http://nzsa.rsnz.org/local_groups.shtml). This web page also contains contact details for WSG, names of sponsors, and details of forthcoming talks. A link can also be found there so that anybody can add or delete their name from the mailing list.

If anybody is visiting Wellington at a time coinciding with a talk, then you are most welcome to attend. No registration is required. We are also keen to receive offers of talks from people who have something they would like to present. Many individuals work in isolation from other statisticians and often have little opportunity to discuss their work with others. WSG aims to provide a forum for such people too.

We are grateful to all the WSG sponsors: Victoria University of Wellington, Statistics New Zealand, the Ministry of Social Development and Statistics Research Associates Ltd. Thanks are due to David Harte for convening the group since the start of 2007 and Alistair Gray who continues to look after the finances and refreshments at each meeting. Also thanks to Ivy Liu who dealt with the room bookings for 2007 and John Haywood, who is now back from his 2007 sabbatical and is again booking rooms and helping with other matters.

John Haywood

Ernie Kalnins

Ernie Kalnins has been an active member of the mathematics community in New Zealand since arriving at the University of Waikato in 1975. Since this time he has made significant and prolific research contributions, especially in his work on symmetries of partial differential equations, separable coordinates and superintegrable systems. In recognition of this work, he was awarded the 2007 NZMS Research Award. Earlier recognition of his work was in 1992 when he was elected a Fellow of the Royal Society of New Zealand. He has previously been awarded two Marsden grants.

Born in Austria in 1947, Ernie came to New Zealand as part of the displaced persons group in 1949. He eventually became a New Zealand citizen and ended up in Christchurch where he studied at the University of Canterbury. He graduated from there with a BSc(Hons) degree in 1967. From Christchurch, he went to the University of Western Ontario where he completed his MSc in Applied Mathematics in 1968. He stayed there for his PhD. He completed his doctorate in 1972 with a thesis titled "Subgroup reductions of the Lorentz Group".

After completing his doctorate, he worked for three years as a post-doctoral fellow at the University of Montreal. He then started his academic career at the University of Waikato where he began as a lecturer in 1975. He quickly rose through the ranks becoming Senior Lecturer in 1979, Associate Professor in 1985, and was promoted to a Personal Chair in Mathematics in 1994.

Ernie and Anne have two children; a son and a daughter. His hobbies include photography (with film cameras) and swimming.

For over thirty years Ernie has been an active researcher in symmetries of partial differential equations, separable coordinates and superintegrable systems.

The main thrust of the work on separable coordinates is the study and theoretical understanding of the notion of separable equations as a method for solving classical partial differential equations. What has been the cornerstone of this work is the understanding of this method from two points of view:

(1) When, given suitable constants of the motion or symmetries, can separation occur?

(2) What are all the really different separable coordinate systems on a given manifold?

This work has been the result of a longstanding collaboration with Willard Miller Jr of the University of Minnesota together with Jonathan Kress of the University of NSW, George Pogosyan of the Joint Institute for Nuclear Research in Dubna, Russia, and Pavel Winternitz of the University of Montreal.

More recently, the notion of superintegrability has been studied in detail with a view to constructing a theory of this topic. This idea generalises the properties of the equations of planetary motion and the Coulomb atom in quantum mechanics, each of which admit extra symmetries, which do not form a group. The resulting relevant idea is that of a quadratic algebra. This idea together with its representation theory forms the basis of current research.

While at Waikato he has supervised a number of graduate and postgraduate students. Titles of PhD theses from his students include "Variable separation for heat and Schrödinger equations", "Killing spinors, Teukolsky equations and the intrinsic characterisation of spin wave equations", "Bodies of finite extent in classical and general relativity" and "Geodesic geometry of black holes". The last three theses reflect an interest in the geodesic geometry of physically interesting space times. In particular, the geodesic geometry of black holes as well as perturbations of these space times.

Ernie has over 130 publications listed on MathSciNet. This includes his research monograph "Separation of variables for Riemannian spaces of constant curvature". He has given many talks on his research at international conferences and colloquia as well as seminars at universities he has visited. At the national level, Ernie has served on the Council of the NZMS from 1984 to 1987 and from 1993 to 1996.

The contribution of Ernie to the mathematics community has been significant and no doubt this will continue in the future.

Stephen Joe

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\begin{aligned}
&[L_i, R] = 4\{L_i, L_k\} - 4\{L_i, L_j\} - (8 + 16a_j)L_j + (8 + 16a_k)L_k + 8(a_j - a_k),\\
&R^2 = \frac{8}{6}\{L_1, L_2, L_3\} + -(16a_1 + 12)L_1^2 - (16a_2 + 12)L_2^2 - (16a_3 + 12)L_3^2\\
&\quad + \frac{52}{3}(\{L_1, L_2\} + \{L_2, L_3\} + \{L_3, L_1\}) + \frac{1}{3}(16 + 176a_1)L_1\\
&\quad + \frac{1}{3}(16 + 176a_2)L_2 + \frac{1}{3}(16 + 176a_3)L_3 + \frac{32}{3}(a_1 + a_2 + a_3)\\
&\quad + 48(a_1a_2 + a_2a_3 + a_3a_1) + 64a_1a_2a_3.
\end{aligned}
$$

OBITUARIES

Associate Professor Peter Gibbons

Peter Gibbons died on 13th February 2008. Staff in the Department of Computer Science at Auckland University, and all of Peter's many friends and colleagues, are still shocked by this sudden and tragic loss.

Peter's academic career began at Massey University where he completed a BSc in Mathematics and Statistics, with 1st class Honours, in 1970. This was followed in 1972 by an MSc in Computer Science with Distinction - we believe this was the first degree in Computer Science awarded in New Zealand. Having gained a postgraduate scholarship, with overseas tenure, he moved to Toronto to undertake his PhD, completing this in 1976. He returned to lecture in Computer Science at Massey University, then moved to Auckland in 1980 as a Senior Lecturer as the first external hire of the newly established Department of Computer Science. He became an A/Prof in 1993 and was with our department through his retirement in 2004, when he became an Honorary A/Prof.

Peter's research area was on the boundary between Mathematics and Computer Science in the field of Combinatorics, in particular the subject of "block designs" involving the use of computers to search for interesting and rare patterns in blocks of numbers. Although this is a theoretical subject it has very practical applications in areas such as design of experiments and network routing. Peter maintained his research links with Toronto, returning there for many sabbatical visits and he was still working in this area in his retirement. Although this research area is very specialised there is internationally a small group who work on such problems - Peter was one of the first to realise that, although he lived remotely in New Zealand, the internet meant that he could remain in collaboration with colleagues world-wide. Peter also hosted a steady stream of visitors who came to work with him — this greatly contributed to the research atmosphere in our department, particularly in the early days. Peter inspired many others into research, often drawn from the thousands of students whom he taught. These colleagues can be found peppered throughout New Zealand and the world.

Peter taught his research specialization, both at graduate and undergraduate level. He was also willing to teach introductory programming to first-year students and programming at a more-advanced level and to get involved with new areas, such as Multi-media and BioInformatics, where his knowledge and expertise could be applied. His course organization was, as with everything he did, meticulous - his teaching was always highly rated by students. He diligently supervised many student theses, again, often outside his central research area. Peter was closely involved with staff-student activities and with the well-being of students. He judged and contributed to supervision of programming competitions. When involved with student enrolment, Peter always acted with compassion towards students which would often see him 'bending' the rules to help marginal cases. Whenever there was a student in difficulty, or a tragedy, which in a large department occurs from time to time, Peter seemed to be involved talking to affected students or their parents. To help students through difficulties Peter set up a student support network within the department, which was innovative in its time, still running, and now widely copied.

Initially the department had very few staff so everybody had to contribute to its running. Peter was a senior staff member and always involved with administration. For many years he was the designated deputy head, taking over in the absence of the head, and in 1997 had a 3-year period as HOD himself. This was a difficult time with severe resource constraints due to a sinking lid policy at the university when Computer Science demand was rocketing. Throughout this, he kept the department in excellent spirit, juggled our meagre resources outstandingly well and led us through academic reviews, that resulted in increases in budgets and staffing, leading ultimately to the new building we now occupy.

Peter's friendly nature led to his having a great range of personal contacts in other institutions, and in industry. He was a member of the New Zealand Computer Society and helped in organising their conferences. Through these contacts he helped in arranging and awarding externally funded student prizes and support. Peter was involved with all social activities within the department if he wasn't organising an event he would certainly be taking part. Peter loved to chat and was always willing to stop by for a yarn or share a joke. If we share a common mental image of Peter it will be of him laughing uproariously as he exchanged quips and friendly jibes with others in the department.

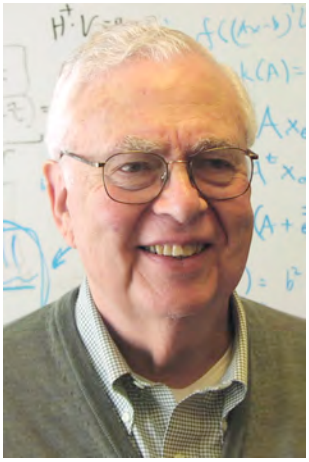
Outside the University Peter's main interests were his immediate and extended family, his house and garden, and his great love of music. Peter and his wife Noela many times hosted the department staff for BBQs and dinners at their house. Peter was a long-time member of the Auckland Choral Society and heavily involved in its management the choir sang at his funeral service in an overflowing McLaurin Chapel. Peter's son Rainer is the section-leader oboist with the City of Birmingham Symphony Orchestra.

Although Peter was retired he was a still a central figure in the department, continuing his research and continuing to engage with us. He leaves a large gap in our lives; we will continue to remember him fondly.

Prof. Bob Doran, April 2008

More photos from the Workshop on Multi-scale Modelling of the Respiratory System

Remembering Gene Golub in Auckland



Gene Golub February 29, 1932- November 16, 2007

Professor Gene Golub of Stanford University was born in Chicago on February 29, 1932, and died unexpectedly of myeloid leukemia at Stanford on November 16, 2007. Gene Golub was a central figure in numerical analysis from the earliest days of this subject; that is from when it started to gain recognition as a serious mathematical science in its own right. Although his contributions were mainly in the field of numerical linear algebra, his influence has extended much more widely through his encouragement and personal commitment to all aspects of scientific computation. Some of these wider contributions include the development of the SIAM journal publishing enterprise, and his role as a founder editor of Acta Numerica. He was also on of the founders of NA-Net, NA Digest, and the quadrennial ICIAM Congresses. As the scope of numerical analysis has widened, the field has kept itself at the same time small and self-contained through the personal style of Gene and people like him.

To celebrate Gene's life, Michael Overton at the Courant Institute organized a Gene Golub Around the World celebration, at which Gene's friends and colleagues gathered around the globe on Friday, February 29, 2008, the date that would have been his 19th birthday. As part of this event, a small workshop was held in the Department of Engineering Science at The University of Auckland. The "Gene Day in Auckland" (http://www.math.auckland.ac.nz/wiki/Gene_Day_in_Auckland) was the first to begin a sequence of 32 events in 23 countries with notable gatherings in Adelaide, Berlin, Canberra, Dartmouth, Mass., Delft, Hong Kong, Leuven, Linkoping, Oxford, Pisa, Porto, Stanford, Tel Aviv, Tripolis, Urbana-Champaign and Waterloo. The web page http://www.cs.nyu.edu/overton/genearoundtheworld contains links to all these events. The organizers of the Leuven meeting even constructed a Mosaic picture of Gene from submitted photographs of all participants that can be found at http://homes.esat.kuleuven.be/~magudelo/GeneGolubMosaic.jpg.

The Auckland workshop began with a brief talk by Andy Philpott on an algorithm due to Bartels and Golub for stably updating the factors of a linear programming basis matrix $B = LU$ after one of the columns of B has been changed. The fast implementation of this algorithm is widely applied in many optimization codes.

In the next talk at the workshop, John Butcher outlined Gene Golub's contributions to algorithms for computing the famous Singular Value Decomposition (SVD) of a matrix. Orthogonal transformations are popular in numerical linear algebra because they do minimal harm to the integrity of the data. In particular, the QR algorithm which replaces a linear system $Ax = b$ by $Rx = Q^\top b$, where $A = QR$ with Q orthogonal and R upper triangular, does not alter the condition number. One of the most famous contributions of Gene Golub is a reliable algorithm for applying orthogonal transformations on both sides of A so that it transforms to a diagonal (or possibly truncated diagonal) matrix $\widetilde{A}$. This results in a decomposition of A into the product

$$A = P^\top \widetilde{A} Q$$

where P and Q are orthogonal. A trivial example of this SVD is in the solution of an ill-posed problem like

$$A \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} \approx \begin{bmatrix} b_1 \\ b_2 \end{bmatrix}, \quad A = \begin{bmatrix} 0.7 & 0.7 \\ 0.1 & 0.1 \end{bmatrix},$$

where the error should be as small as possible in the least-squares sense and, if the solution to this problem is not unique, then the solution with least norm is required.

Rewrite the problem with a change of basis $\widetilde{A}\widetilde{x} \approx \widetilde{b}$, where

$$\widetilde{A} = PAQ^\top, \quad \widetilde{x} = Qx, \quad \widetilde{b} = Pb, \quad P = \frac{\sqrt{2}}{10} \begin{bmatrix} 7 & 1 \\ -1 & 7 \end{bmatrix}, \quad Q = \frac{\sqrt{2}}{2} \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$$

and it is found in turn that

$$\widetilde{A} = \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}, \quad \widetilde{x} = \begin{bmatrix} \widetilde{b}_1 \\ 0 \end{bmatrix}, \quad x = \frac{(7b_1 + b_2)}{10} \begin{bmatrix} 1 \\ 1 \end{bmatrix}.$$

In this simple example it is easy to find P and Q. The famous algorithm of Gene Golub solves the problem in the general case.

In his talk, John mentioned another famous example of orthogonal transformations, namely the QR algorithm of Francis and Kublanovskaya for calculating eigenvalues and eigenvectors. Gene was associated with a wonderful application of this method, to evaluate coefficients and abscissae of Gaussian quadrature formulae.

John's talk was followed by a description by Rosalind Archer of an application of SVD to inverse modelling used to interpret tracer test data from an oil field to determine reservoir permeability and remaining oil in place. SVD plays an important role in determining both the parameter values and their resolution. Rosalind was a student in Gene's numerical linear algebra class, and she shared with the audience some of the Gene's teaching style - his overwhelmingly challenging take-home exam contrasted with the kindnesses and generosity shown towards her class.

Rosalind was followed by Michael O'Sullivan, another Auckland alumnus who did his PhD at Stanford. Mike showed how Gene Golub's contributions to numerical linear algebra are at the centre of new methods for solving large-scale infinite-horizon stochastic dynamic programming problems.

In the penultimate talk of the workshop, Garry Tee outlined the contributions of Gene Golub to iterative methods for linear systems, focussing on four key papers.

1. *Chebyshev semi–iterative methods, successive over–relaxation iterative methods, and second–order Richardson iterative methods, Parts 1 & 2* (with R. S. Varga).
2. *A generalized conjugate gradient method for non-symmetric systems of linear equations* (with Paul Concus).
3. *A generalized conjugate gradient method for the numerical solution of elliptic partial differential equations* (with Paul Concus & Dianne P. O'Leary).
4. *Hermitian and Skew–Hermitian Splitting Methods for non–Hermitian Positive Definite Linear Systems* (with Zhong-Zhi Bai & Michael K. Ng).

In the final talk of the workshop Jeff Hunter outlined Gene Golub's involvement with the Statistics community, showing photographs of him with well-known statisticians (including T.W. Anderson, Ingram Olkin, Simo Puntanen, C.R. Rao, Alastair Scott, George Styan and Joachim Werner). Gene's recent work on the computation of Google's PageRank was highlighted by talking to a selection of the slides of the presentation that Gene used in his talk on this subject at the Workshop on Matrix Theory and Applications in Physical, Biological and Social Sciences held at Penn State University in 2006.

The Gene Day was closed by David Ryan, who reflected on the interaction that he had enjoyed with Gene Golub and Michael Saunders at Stanford. A number of the speakers made some other comments about their personal relationships with Gene Golub, which I have reproduced verbatim below. The workshop was followed by a Yum Cha lunch at the Dynasty Restaurant, a tribute to Gene's love of Chinese food.

Personal reminiscences

I first met Gene in San Francisco on 1 January, 1965 when he met the ship on which my family and I had travelled from New Zealand. During my very pleasant 18 months visiting the Computer Science Department at Stanford as well as the Stanford Linear Accelarater Centre, we met many times and had many enjoyable conversations. We also met frequently for lunch, especially when there were numerical analysis visitors.

Although I give 1965 as the date of my first meeting with Gene, I had known his name since 1956, when I was a research student in Sydney, Australia. The first university-built computer in the Southern Hemisphere, on which I was cutting my teeth, was named SILLIAC because it was the Sydney version of ILLIAC — the Illinois University Automatic Computer. Our library was kick-started with the gift from Illinois of their collections of subroutines, many written by Gene Golub.

I felt that Gene was a man of contradictions and contrasts. He was gregarious and at the same time lonely. He was universally admired but thought of himself as unrecognised. Somehow the complicated person who was Gene Golub achieved some amazing things. Of course his own work as a mathematical scientist was amazing but his influence went well beyond his own speciality of numerical linear algebra. For example he forged friendships and collaborations with such people as Germund Dahlquist. Germund for several years enjoyed an adjunct position at Stanford around the time he was working on his famous result that A-stable one-leg methods are also G-stable. The proof was constructive and an algorithm for doing the construction was implemented by a Stanford graduate student.

Gene once made an off-the-cuff comment to Bill Gear, "Numerical ODEs: is there anything left to do?" This provocation led to a nice paper by Bill which concluded that there was.

I last saw Gene at the ICIAM 2007 conference in Zürich. He was starting to look his age but was still the centre of warm and sociability at a pleasant house party at the home of Walter and Heidi Gander. He told me something that was on his mind. He was wondering if Francis knew how significant his 1961 work on QR had become.

John Butcher

In the late 1950s Gene and I were both working on Chebyshev semi–iterative methods for solving linear equations. I learned of Gene's work through Richard Varga, and I discussed their joint paper in my first mathematics paper (with David W. Martin) on Iterative methods for linear equations with symmetric positive definite matrix, Computer Journal 4 (1961), 242–254; and in some of my further papers.

When Gene was at the University of Cambridge in 1959–1960 he shared an office with W. Kahan. I met Kahan at that period, but I do not recall meeting Gene then, even though we both attended a lecture by Cornelius Lanczos at the National Physical Laboratory in 1960. In 1965 I went on leave from the University of Lancaster to Stanford University Computer Science Department, where I did get to know Gene. At a Chinatown restaurant in San Francisco, he introduced me to sweet-and-sour spare ribs (which remains one of my favourite dishes).

John Butcher was then in the Stanford University Computer Science Department, and we had offices across the corridor from Gene's office. I heard a graduate student ask Gene a technical question about Runge–Kutta methods for numerical solution of ODEs, and I heard Gene's response: "Well, the world's greatest authority on Runge–Kutta methods is across the corridor – go and ask John Butcher!".

Subsequently I met Gene at various conferences (including ICM 1966 in Moscow); and he visited our Department of Mathematics during the 1980s (twice, I think), and the SCADE conference here in 1993.

We continued to correspond until August 2007. I was 28 days younger than Gene, and the report of his death affected me deeply.

Garry Tee

Gene Golub was a keen participant at the annual International Workshops in Matrices and Statistics as well as related workshops. He and I were both invited speakers at a Workshop on Matrix Theory and Applications in Physical, Biological and Social Sciences, organized by Professor CR Rao and held at Penn State University, July 27-29th, 2006. I got to know Gene through these recent workshops. He was an outstanding mentor. I will miss his cheerful encouragement and friendship. He was an outstanding figure in the field of matrix computations but his memory will live on in the many contributions that he made.

Jeffrey Hunter

FEATURES

JH Michell Medal 2008

At the annual meeting of ANZIAM (Australian and New Zealand Industrial and Applied Mathematics) in Katoomba, Australia in February, Carlo Laing was the awarded the JH Michell Medal for outstanding young researchers, becoming the first New Zealander to be awarded the medal. The citation is below. Carlo Laing did his schooling and undergraduate degrees in Auckland, and received his B.Sc. degree in 1991. He took a Masters' Degree in Mathematics and Physics from the University of Auckland in 1994, and a Ph.D. degree from Cambridge University (DAMTP) in 1998. He has held postdoctoral and visiting positions in Cambridge, Surrey, Pittsburgh and Ottawa before taking up a lecturing position at Massey University in Auckland, New Zealand in 2002. He is currently a senior lecturer in Mathematics at that University.

Carlo has already an extensive publication record, containing some 32 journal papers and 2 book chapters. The broad theme of his work is in the area of dynamical systems, which he has applied to a variety of problems in wave propagation and the analysis of mathematical models of neuronal activity. His work has appeared in prestigious journals in the field, such as Physica D and Dynamics and Stability of Systems, the SIAM journals, Nonlinearity and others. He has also published with leading international researchers in the area, such as Glendinning, Troy, Ermentrout, Kevrekidis, Coombes and numerous others. A couple of these international figures volunteered their opinions on Carlo Laing's work, pointing out that he has developed many of the tools in the area of neuronal modelling, and that his work is beautiful, deep and original.

In addition to his deep research work, Carlo has been an active teacher at all levels, from service subjects for business majors to undergraduate calculus and specialist graduate courses in mathematical methods and neuroscience modelling. He won a distinguished teaching award from Massey University in 2006. He has given talks to a mathematics teachers' evening and a university open-day activity, in addition to a large number of technical seminars at conferences and in universities around the World. He is a regular contributor to ANZIAM conferences and Mathematics meetings in New Zealand. He has held a Marsden Fund grant and is currently the Chair of the New Zealand branch of ANZIAM.

The Committee strongly commends Dr Carlo Laing as the 2008 Michell Medal winner. He has proved himself to be a leader in research as well as a capable and enthusiastic expositor of Applied Mathematics on a wide variety of levels, and will doubtless continue to make strong contributions to our subject well into the future.

BOOK REVIEWS

Twisted. The distorted mathematics of greenhouse denial, by Ian Enting, Australian Mathematical Sciences Institute (AMSI), pp. iv + 152. Publication date: November, 2007. Paperback - ISBN: 9780646480121 - AU $24.95

This book is an exposé of the numerous contradictions in the arguments of the 'greenhouse sceptics'. The author argues that these sceptics are far from constituting an alternative to mainstream climate science. The book is concerned with identifying the ways in which the science is misrepresented rather than trying to analyse people and motivations. Simple graphical illustrations are used to show how representations and interpretations of data can be misleading. The author finally presents calculations of the actual emission levels that would be required to stabilise CO_2 concentrations. These new calculations demonstrate the extent to which delays in mitigation have increased the difficulty in stabilising greenhouse gases. This, the author argues, defines the real cost of greenhouse denial.

Apart from climate science and policy implications, Twisted highlights the value of mathematics and statistics to inform public debate. Some important ideas covered are: Evaluating evidence, Mathematics and evidence, Evidence and statistics, Complexity, climate and feedbacks, Mathematical modelling and the trade-offs between the various types of modelling, Probing the limits of models, Model intercomparison, and Model results and policy.

The book is written in a relatively non-technical way and is easily accessible to the general public. It is full of interesting anecdotes and quotations, and well describes the journeys of a 'mathematical modeller'. Special attention to public debate on climate in New Zealand and Australia is included.

The publication of *Twisted* is supported by the Australian Mathematical Sciences Institute to promote the role of mathematics and statistics in informing public policy.

Ian Enting is Professorial Fellow in the ARC Centre of Excellence for Mathematics and Statistics of Complex Systems, based at The University of Melbourne.

Aroon Parshotam

Please indicate your willingness to review new books, to the Review Sub-Editor Bruce van Brunt, at B.vanBrunt@massey.ac.nz. Bruce will then organise for you to receive a complimentary copy for reviewing.

The Review Sub-Editor led the Editor, Andrew Fowler, and Penny Abercrombie up to the top of Mount Ruapehu on a fine Sunday afternoon in February!

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Functions of Matrices: *Theory and Computation* NEW

Nicholas J. Higham

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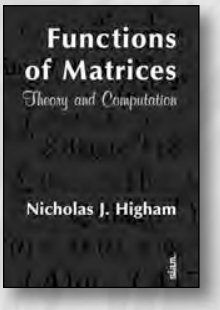
– Alan Laub, University of California, Los Angeles



The only book devoted exclusively to matrix functions, this research monograph gives a thorough treatment of the theory of matrix functions and numerical methods for computing them. The author's elegant presentation focuses on the equivalent definitions of $f(A)$ via the Jordan canonical form, polynomial interpolation, and the Cauchy integral formula, and features an emphasis on results of practical interest and an extensive collection of problems and solutions.

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Linear Feedback Control: *Analysis and Design with MATLAB*

Dingyü Xue, YangQuan Chen, and Derek P. Atherton

This book discusses analysis and design techniques for linear feedback control systems using MATLAB® software. By reducing the mathematics, increasing MATLAB working examples, and inserting short scripts and plots within the text, the authors have created a resource suitable for almost any type of user.

2007 · xii + 356 pages · Softcover
ISBN 978-0-898716-38-2 · List Price $99.00
SIAM Member Price $69.30 · **Code DC14**

A First Course in Order Statistics NEW

Barry C. Arnold, N. Balakrishnan, and H. N. Nagaraja

Written in a simple style that requires no advanced mathematical or statistical background, *A First Course in Order Statistics* introduces the general theory of order statistics and their applications. The book covers topics such as distribution theory for order statistics from continuous and discrete populations, moment relations, bounds and approximations, order statistics in statistical inference and characterization results, and basic asymptotic theory.

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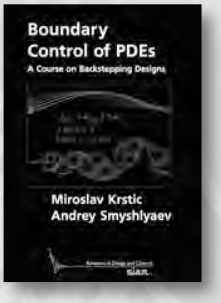
Boundary Control of PDEs: *A Course on Backstepping Designs* NEW

Miroslav Krstic and Andrey Smyshlyaev



This concise and highly usable textbook presents an introduction to backstepping, an elegant new approach to boundary control of partial differential equations (PDEs). Backstepping provides mathematical tools for constructing coordinate transformations and boundary feedback laws for converting complex and unstable PDE systems into elementary, stable, and physically intuitive "target PDE systems" that are familiar to engineers and physicists. Readers will be introduced to constructive control synthesis and Lyapunov stability analysis for distributed parameter systems.

May 2008 · x + 192 pages · Hardcover
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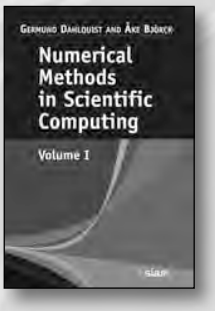
SIAM Member Price $62.30 · **Code DC16**

Numerical Methods in Scientific Computing, *Volume I* NEW

Germund Dahlquist and Åke Björck



This new book from the authors of the highly successful classic *Numerical Methods* (Prentice-Hall, 1974) addresses the increasingly important role of numerical methods in science and engineering. While treating traditional and well-developed topics, it also emphasizes concepts and ideas of importance to the design of accurate and efficient algorithms with applications to scientific computing.

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Michael C. Ferris, Olvi L. Mangasarian, and Stephen J. Wright

This textbook provides a self-contained introduction to linear programming using MATLAB® software to elucidate the development of algorithms and theory. Early chapters cover linear algebra basics, the simplex method, duality, the solving of large linear problems, sensitivity analysis, and parametric linear programming. In later chapters, the authors discuss quadratic programming, linear complementarity, interior-point methods, and selected applications of linear programming to approximation and classification problems.

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4/08

CONFERENCES

REPORT OF THE 1st JOINT MEETING OF THE AMERICAN AND NEW ZEALAND MATHEMATICAL SOCIETIES

The meeting, which incorporated the 2007 New Zealand Mathematics Colloquium, took place at Victoria University of Wellington from 12–15 December 2007. It drew on the expertise of the American Mathematical Society's sponsorship of international meetings,the New Zealand Mathematical Society's joint meetings with the Australian Mathematical Society and the 2004 joint meeting of the NZMS and the Israel Mathematics Union at Victoria.

The meeting was opened by US Ambassador to New Zealand, Bill McCormick, CEO of the Royal Society of New Zealand, Dr Di McCarthy and VUW's Deputy Vice-Chancellor Research, Neil Quigley. The AMS was represented at the meeting by Vice-President Ruth Charney.

The conference was attended by 293 delegates of whom 51 were students. Delegates came from New Zealand (125), the United States (73) and from 30 other countries on six continents. There were eight plenary addresses with three speakers from the US sponsored by the AMS—Michael Freedman (Microsoft Research), Assaf Naor (Courant Institute) and Theodore Slaman (University of California at Berkeley)—and a fourth, Bruce Kleiner (Yale University), funded by a grant from the NZ Institute of Mathematics and its Applications, together with four local speakers—Marston Conder, Rod Downey, Gaven Martin and Matt Visser—sponsored by the NZMS. There were 225 speakers in 15 special sessions, including 20 keynote addresses, in addition to 32 general contributed talks. These talks ran in seven parallel streams over the four days, including one set of evening sessions. Special sessions covered a wide range od pure and applied mathematics as well as history and philosophy of mathematics and mathematics education, with emphasis on university education. Organisers of the special sessions contributed greatly to the overall success of the meeting. Several reported that significant progress was made on problems and projects as a result of collaboration at or as a result of the meeting.

The quality of the presentations, especially the plenary addresses, was extremely high. Although the special sessions varied considerably in scale from 5 to 30 speakers, they all provided opportunities for communities of researchers to interact, embark on or continue collaborations. A notable feature of the talks, especially the plenary addresses, was the unexpected degree of connection between them around the themes of computation and computability. This clearly represents an area of research strength in both countries but is also an underlying feature of a wide range of current mathematics research, both pure and applied.

At the conference dinner, Gaven Martin presented the Aitken Prize for best talk by a student jointly to Peter Humphries and Ratneesh Suri, the inaugural NZMS Early Career Award to Noam Greenberg and Catherine McCartin and the NZMS Research Award to Ernie Kalnins. Other enjoyable social events included a pre-conference reception for the registrants, a reception hosted by the Deputy Chief of Mission of the US Embassy for the organisers and plenary speakers, hikes along the Skyline Track and to Red Rocks and visits to the Karori Wildlife Sanctuary. Many delegates were able to explore Wellington, enjoy its excellent cafés and restaurants and extend their visits to see other parts of New Zealand, attend a number of adjacent mathematical meetings and visit colleagues at NZ universities.

The conference organising committee consisted of Peter Donelan, Rod Downey, Noam Greenberg and Dillon Mayhew at VUW, together with Matthew Miller (AMS Associate Secretary). Robert Daverman (AMS Secretary), Mick Roberts and Gaven Martin (NZMS Presidents) strongly supported the meeting's inception. The scientific committee included Jeff Cheeger, Peter Jones, Vaughan Jones. Superb administrative support was provided by Ginny Whatarau (VUW) and Donna Salter (AMS).

The meeting was supported financially by grants from AMS and NZMS, and from NZIMA which provided travel grants for graduate students as well as funding for the additional plenary speaker. The organisers endeavoured to keep the registration fee as low as possible (NZ$140 standard, NZ$40 for students). Unfortunately, some of the incidental costs came in above budget and the NZ Mathematics Colloquium float was consequently used. NZIMA and NZMS funding enabled the conference to provide travel grants worth NZ$6,000 in total to 14 graduate students.

Peter Donelan, Matthew Miller
Joint Meeting Conveners

AUSTRALIAN AND NEW ZEALAND INDUSTRIAL AND APPLIED MATHEMATICS

NEW ZEALAND BRANCH REPORT

The branch AGM was held during the NZ Maths Colloquium in Wellington in December. Vivien Kirk (University of Auckland) was newly elected to the committee; and Carlo Laing (Massey, Chair), Allison Heard (Auckland, Secretary/Treasurer), Boris Baeumer (Otago), Mark McGuinness (VUW), Aroon Parshotam (Massey), Tanya Soboleva (AgResearch) and David Wall (Canterbury) were reelected. The ANZIAM AGM was during ANZIAM 2008 in February. Mick Roberts (Massey) was reelected as the New Zealand representative on the Executive Committee.

ANZIAM 2008 was held February 3-7, in Katoomba, NSW. Two of the nine plenary speakers were from New Zealand (Andrew Pullan, University of Auckland and Mick Roberts, Massey University). The conference provided New Zealanders with the interesting experience of travelling to Australia in the middle of summer to experience both lower temperatures and more rainfall. Many delegates used the free afternoon to explore the Blue Mountains National Park, and to learn just how little time it takes for a leech to become attached to one's foot. During the meeting, Carlo Laing (Massey University) was awarded the J.H. Michell Medal for outstanding young researchers, and Sharleen Harper (also Massey University) was highly commended in the competition for best student presentation.

ANZIAM 2009 will be held February 1-5, 2009 in Caloundra on Queensland's Sunshine Coast.

ANZIAM 2010 will be held in Queenstown, January 31-February 4. The co-chairs organising this meeting are Alex James (Canterbury) and Boris Baeumer (Otago).

Carlo Laing, Mick Roberts

Conferences Coming Up

June 16-20, 2008, University of Otago: **Permutation Patterns 2008**
website: www.cs.otago.ac.nz/staffpriv/mike/PP2008

July 14-18, 2008, University of Auckland: **GLADE 2008 Conference on Numerical Methods for Differential Equations and Related Problems**.
website: http://www.auckland-ode-2008.org/

July 21-25, 2008, University of Auckland: **GLADE 2008 Workshop on Numerical Methods for Differential Equations and Related Problems**.
website: http://www.auckland-ode-2008.org/

August 11-15, 2008, Fields Institute, 222 College Street, Toronto: **Fields-MITACS Industrial Problem-Solving Workshop (FMIPW)**.
website: http://www.fields.utoronto.ca/programs/scientific/08-09/FMIPW/

December 8-12, 2008, Universtiy of Canterbury: 7*th* **Australia-New Zealand Mathematics Convention**.
website: http://www.math.canterbury.ac.nz/ANZMC2008/

December 15-19, 2008, University of Auckland: 4*th* **International Conference on Combinatorial Mathematics and Combinatorial Computing**.
website: http://www.cs.auckland.ac.nz/research/groups/theory/4ICC/

February 1-5, 2009 ANZIAM 2009 in Caloundra on Queensland's Sunshine Coast.
website: http://www.sci.usq.edu.au/conference/index.php/ANZIAM/2009

**Workshop on the Theory of Magnetic Confinement for Fusion (LesWoods08)
to be held on 22nd September 2008 at Balliol College, Oxford.
A memorial symposium**

Given the critical importance of energy research at the present time, a forward-looking one-day research workshop on the Theory of Magnetic Confinement for Fusion as a source of energy has been organised. The workshop will be very much in the spirit of Professor L.C. Woods who passed away last year and whose life and work it will also commemorate. Les Woods was a fiercely independent applied mathematician who criticised aspects of the modelling of fusion plasmas and this workshop aims to encourage independent thought and to promote new ideas in plasma physics and fusion. Readers of this Newsletter will have read of Les Woods, a New Zealander with a very high reputation, in the August 2007 edition: NZMS Newsletter, Number 100, August 2007, pp 28-29. It is hoped NZ will be represented at this workshop. Readers who are interested and able to attend, please contact a colleague in Oxford: Joanna Ashbourn [jashb@herald.ox.ac.uk] for further details.

This will be a very different kind of meeting from the usual "report on progress" type of workshop normally addressed primarily to researchers in the field. Around half of the scheduled time on the day will be devoted to panel discussions.

Invited Speakers include: Bruno Coppi (MIT), Steve Cowley (UCLA and Imperial College London), Per Helander (Max Planck Institute, Griefswald, Germany), Wayne Houlberg (ITER).

Photos from the ANZIAM meeting in Katoomba

NOTICES

NZJM Committee

The NZMS and the Department of Mathematics of the University of Auckland have jointly published the New Zealand Journal of Mathematics since 1992. From Volume 36 the Journal is being published solely electronically. It is now online at the address http://nzjm.math.auckland.ac.nz/. NZJM welcomes submissions of papers, which may be sent to any member of the Editorial Board, details of which are found at the same address.

NEW COLLEAGUES

Chris Fonnesbeck

I moved to Dunedin this past February to join the Maths and Stats department at the University of Otago. I had been living in Atlanta for the past 3 years, working as a research scientist for the Fish & Wildlife Research Institute (St. Petersburg, FL), where I was responsible for the analyses and modelling of population dynamics for endangered marine mammals (e.g., Northern right whales and Florida manatees). Prior to that, I was a Ph.D. student and a post-doctoral fellow at the University of Georgia, studying optimisation and decision analysis related to natural resource management, and adaptive management in particular. In total, I spent all of eight years in Georgia. I originally hail from Vancouver, British Columbia, and completed two degrees at the University of British Columbia, in the Department of Zoology. Here at Otago, I hope to continue collaborating with ecologists on a variety of issues, ranging from population estimation and mark-recapture analysis to the use of adaptive resource management for ecological decision-making in the face of climate change.

Jörg Frauendiener

I came to Dunedin in December last year to join the Department of Mathematics and Statistics as Professor of Applied Mathematics. I had been at the Centre of Mathematics for Applications, a Norwegian centre of excellence at the University of Oslo. Before that I was a university lecturer at the University of Tübingen in Germany.

I was born, raised and educated in Tbingen, Germany where I did all my degrees up to my dissertation on a special class of solutions of Einstein's equations of general relativity. I spent several years as a post-doc in Pittsburgh (USA) and Oxford (UK) after returning to Germany to join the Max-Planck Institute (MPI) for Astrophysics in Mnchen and later the MPI for Gravitational Physics in Potsdam. In 1997 I returned to Tbingen to work on my Habilitation on "Conformal methods in numerical relativity".

My research interests can be broadly described as (numerical) applications of geometric structures in the natural sciences. I am interested in the numerical solution of the Einstein equations using methods of conformal geometry. As part of this subject I am interested in symplectic numerical methods and discrete geometry applied to the Einstein equations and other geometric PDEs. Another topic of interest is the use of Riemann surfaces in the description of integrable systems and their efficient implementation on computers. Finally, I am currently studying the structure and stability of water-air interfaces of objects submerged under water.

Minutes for the 33rd Annual General Meeting of the NZMS

5.33 pm, Wednesday 12 December 2007
MCLT101, Victoria University of Wellington

Present. Gaven Martin(chair), Winston Sweatman(secretary), Boris Baeumer, Stephen Joe, Shaun Cooper, Rick Beatson, Graeme Wake, Tammy Smith, Kee Teo, Carlo Laing, Phil Wilson, Robert McLachlan, Peter Donelan, David Gauld, Charles Little, Tom ter Elst, Rua Murray, Marston Condor.

1. **Apologies**

   Apologies were received from Graham Weir, Kevin Broughan, Alona Ben Tal and Vivien Kirk.

2. **Minutes of 32nd Annual General Meeting**

   The minutes of the 32nd Annual General Meeting were accepted (motion moved Gaven Martin, Winston Sweatman).

3. **Matters arising from the minutes**

   None.

4. **President's report**

   The President reported that the society was in good shape and that the trend of decreasing membership had been reversed with an increase of about 10%. A reciprocal agreement had been concluded with the Irish Mathematical Society.

5. **Treasurer's report**

   The treasurer Tammy Smith presented her report. She commented that travel grants were generally higher than in the past but this has been covered by more resources. Contributing to the financial well being were the newsletter continuing to be self-funding, there was no Forder Lecturer, the number of subscriptions of both students and staff had increased and interest rates were higher. A bequest of $ 10 000 had been received from the estate of Gloria Olive (discussed later).

   The treasurer's report was approved by the meeting (proposed Gaven Martin, Winston Sweatman).

6. **Membership Secretary's report and annual subscriptions**

   The Membership Secretary's report was accepted. It was agreed that membership fees would go to $ 40 (ex. GST) with a $ 5 discount for early payment. The president pointed out that there was still opportunities to extend membership which contributes to the PBRF. Significant savings can also be made through the reciprocal agreements and it was suggested that there may be scope for further extending these.

7. **Election of Councillors**

   (a) Robert McLachlan takes over as NZMS President with the outgoing President Gaven Martin remaining on Council as Vice-President for a year. The 2nd term of office of councillor Shaun Hendy has ended and he is to step down. Winston Sweatman had also reached the end of his 1st term of office as councillor.

   (b) The following nominations were received
   Nominations for council:
   Winston Sweatman (Massey University) nominated by Gaven Martin, seconded by Robert McKibbin
   Peter Donelan (Victoria University of Wellington) nominated by Gaven Martin, seconded by Robert McLachlan

   They were elected unopposed.

8. **Appointment of auditors**

   It was moved (Gaven Martin, Winston Sweatman) that the current auditors, McKenzie McPhail (4th Floor, Farmers Mutual House, 68, The Square, Palmerston North), be reappointed for another year. The motion was carried.

9. **New Zealand Journal of Mathematics**

   The President commented that there had been continuing problems with the journal. However, progress is being made within the new electronic format and the latest versions are going up online and will start to clear the backlog.

10. **Forder Lecturer 2008**

    The President had consulted HoD's and there was an unanimous choice of Peter Cameron. He will provide a choice of 5 or 6 seminars which Gaven Martin will circulate to HoD's in mid-January 2008 for a response in early February. The Lecture tour will be South to North in April/May.

11. **NZMS Research award/medal and Early Career Award**

    The NZMS Research Award had been made at the RSNZ Science Honours Dinner in Dunedin but the certificate would be re-presented at the Colloquium Dinner. There had been 8 very good candidates for this award. Likewise there was a very strong field of 7 candidates for the Early Career Award and two awards were to be made at the colloquium dinner. There appear that there will continue to be good candidates for these awards for the foreseeable future.

    The proposed Lifetime Award for Mathematics was still being considered in discussions with the RSNZ. Initial estimates of costs to establish a foundation had seemed rather too high, however, it was hoped that these could be brought to a reasonable level. Gaven Martin is to write a proposal to put to the RSNZ Council Meeting in the new year. It was commented that it was felt worthwhile to present this award through the RSNZ if it was not too expensive, otherwise the Society may have to consider doing it itself.

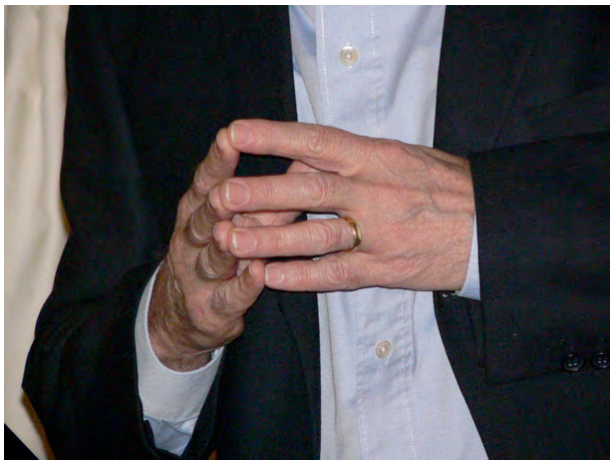
    Graeme Wake congratulated Council on the establishment of the Early Career Award. Robert McLachlan also reminded the meeting of the Hector Medal awarded through the RSNZ.

12. **General business** Returning to the Gloria Olive bequest, it was moved (Gaven Martin, Marston Condor) that one of the travel awards (in the 1st batch of applications each year) be named after Gloria Olive.

    David Gould moved a motion of thanks, seconded by Graeme Wake, to the Outgoing President Gaven Martin and Council Member Shaun Hendy. Gaven Martin thanked the Secretary for his help and wished Robert McLachlan success as the Incoming President.

    The meeting closed at 6.12pm.

Bill Sommerfield is honoured for 25 years service as Secretary of ANZIAM



CALL FOR NOMINATIONS FOR 2008 NZMS AWARDS

CALL FOR NOMINATIONS FOR 2008 NZMS RESEARCH AWARD

This annual award was instituted in 1990 to foster mathematical research in New Zealand and to recognise excellence in research carried out by New Zealand mathematicians. Recipients to date have been John Butcher and Rob Goldblatt (1991), Rod Downey and Vernon Squire (1992), Marston Conder (1993), Gaven Martin (1994), Vladimir Pestov and Neil Watson (1995), Mavina Vamanamurthy and GeoffWhittle (1996), Peter Lorimer (1997), Jianbei An (1998), Mike Steel (1999), Graham Weir (2000), Warren Moors (2001), Bakhadyr Khoussainov (2002), Rod Gover (2003), Eamonn O'Brien (2004), James Sneyd and Robert McLachlan (2005), and Mick Roberts and Robert Aldred(2006), and Ernie Kalnins(2007).

Call for nominations 2008

Applications and nominations are invited for the NZMS Research Award for 2008. This award will be based on mathematical research published in books or recognised journals within the last five calendar years: 2003–2007. Candidates must have been residents of New Zealand for the last three years. Nominations and applications should include the following:

Name and affiliation of candidate. Statement of general area of research. Names of two persons willing to act as referees. A list of books and/or research articles published within the last five calendar years: 20032007. Two copies of each of the five most significant publications selected from the list above. A clear statement of how much of any joint work is due to the candidate.

A judging panel of three persons shall be appointed by the NZMS Council. The judges may call for reports from the nominated referees and/or obtain whatever additional referee reports they feel necessary. The judges may recommend one or more persons for the award, or that no award be made. No person shall receive the award more than once. The award consists of a certificate including an appropriate citation of the awardee's work, and will be presented (if at all possible) at the New Zealand Mathematics Colloquium Dinner in 2008.

All nominations (which no longer need to include the written consent of the candidate) and applications should be sent by 25 July 2008 to the NZMS President, Professor Robert McLachlan, Institute of Fundamental Sciences, Massey University, Palmerston North Campus, Private Bag 11222, Palmerston North 5301, New Zealand.

Please consider nominating any of your colleagues whose recent research contributions you feel deserve recognition!

CALL FOR NOMINATIONS FOR 2008 NZMS EARLY CAREER AWARD

This award was instituted in 2006 for early career New Zealand mathematicians. Recipients to date have been Noam Greenberg and Catherine McCartin(2007).

Call for nominations 2008

Applications and nominations are invited for the NZMS Early Career Award for 2008. Criteria for eligibility are the same as for the Marsden fast start grants. Essentially, this means that applicants must be within seven years of confirmation of PhD with an allowance made for extenuating circumstances. The candidate will be judged on their three best papers and a two-page CV. They will have completed a significant part of their research within NZ. The awardee would also normally be expected to be a member of the NZMS.

A judging panel shall be appointed by the NZMS Council. No person shall receive the award more than once. The award consists of a certificate including an appropriate citation of the awardee's work, and will be presented (if at all possible) at the New Zealand Mathematics Colloquium Dinner in 2008.

All nominations and applications should be sent by 25th July 2008 to the NZMS President, Professor Robert McLachlan, Institute of Fundamental Sciences, Massey University, Palmerston North Campus, Private Bag 11222, Palmerston North 5301, New Zealand.

Application for membership of the NZMS

The New Zealand Mathematical Society (Inc.) is the representative body of professional mathematicians in New Zealand, and was founded in 1974. Its aims include promotion of research in the mathematical sciences, the development, application and dissemination of mathematical knowledge within New Zealand, and effective cooperation and collaboration between mathematicians and their colleagues in New Zealand and in other countries.

Membership categories:

(Full details at www.math.waikato.ac.nz/NZMS/NZMS.html)

Ordinary*	$40 p.a.	
Reciprocal	$20 p.a.	

For overseas residents who are fully paid-up members of societies with which the NZMS maintains a reciprocity agreement (the American Mathematical Society, the Australian Mathematical Society, the Canadian Mathematical Society, the Edinburgh Mathematical Society, the Irish Mathematical Society, the London Mathematical Society, and the Mathematical Society of Japan).

Student*	$ 8 p.a.	For currently enrolled students in NZ
Overseas student	$20 p.a.	For currently enrolled students in overseas

(GST is added to rates for NZ residents.)

Members can also elect to make a donation, when paying their subs, to the NZMS Endowment for Student Support.

* The Society offers NZ students and new staff a special free one-year membership.

Please complete below and mail to:

John Shanks, NZMS Membership Secretary,
Department of Mathematics and Statistics,
University of Otago, P.O. Box 56, Dunedin, NZ

or Fax: +64 (3) 479 8427

E-mail: jshanks@maths.otago.ac.nz

NZMS Application Form

Name: _____ Title: _____

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An institutional address is preferred

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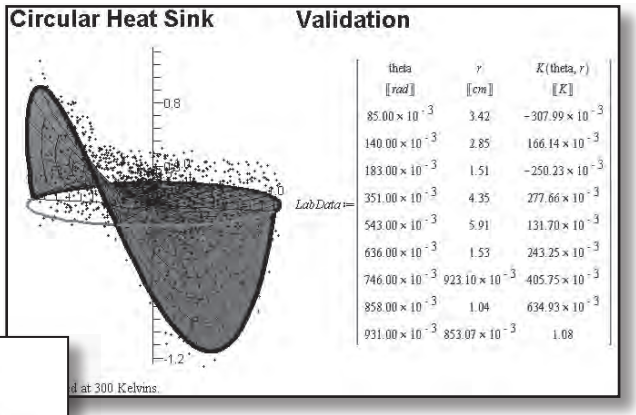

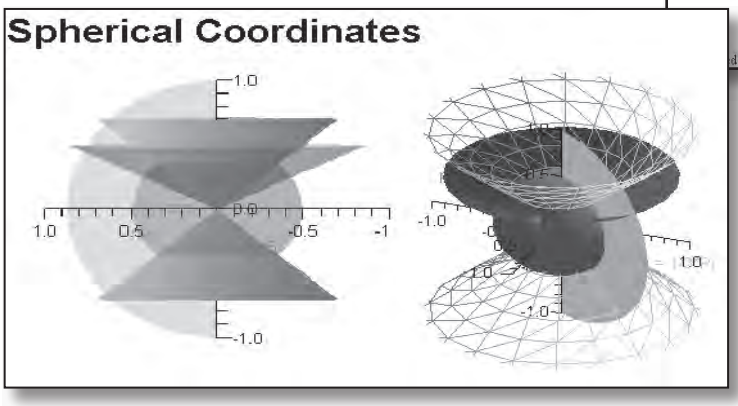

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