Number 108 April 2010

NEWSLETTER

OF THE

NEW ZEALAND MATHEMATICAL SOCIETY

Contents

PUBLISHER'S NOTICE

This newsletter is the official organ of the New Zealand Mathematical Society Inc. This issue was edited by Alex James and Rachael Tappenden with the help of Phil Wilson and Pauline Auger and printed at University of Canterbury. The official address of the Society is:

The New Zealand Mathematical Society,
c/- The Royal Society of New Zealand,
P.O. Box 598, Wellington, New Zealand.

However, correspondence should normally be sent to the Secretary:

Dr. Alex James
Department of Mathematics and Statistics
University of Canterbury
Private Bag 4800
Christchurch 8140
New Zealand
a.james@math.canterbury.ac.nz

NZMS Council and Officers

Newsletter Correspondents

Web Sites

The homepage of the New Zealand Mathematical Society is: http://nzmathsoc.org.nz. (Webmaster: stephenj@math.waikato.ac.nz)

The newsletter is available at: http://nzmathsoc.org.nz/?newsletter.

Editorial enquiries and items for submission to this journal should be submitted as text or LaTeX files to nzmseditor@math.canterbury.ac.nz.

ISSN 0110-0025 (Print), ISSN 1178-8879 (Online)

PRESIDENT'S COLUMN

The Council has been involved in several activities since the last Newsletter. Two particular activities are the development of a new website and the terms of reference for a new joint award with the New Zealand Statistical Association.

The Society's website has been redesigned and is now public. The domain name of the site has changed to `nzmathsoc.org.nz`, so not to be aligned with any one institution. In addition to the obvious changes, the new design includes the ability to allow specified members of the Society access to the site to modify content and formatting. From personal experience, making such modifications is effortless.

To keep members and the public informed of our activities, please send Tom ter Elst (University of Auckland) information regarding upcoming New Zealand based conferences and workshops, and long-term visitors. The later could be particularly helpful if a visitor is here for an extended period of time and is willing to visit other institutions. Thank you to John Shanks (University of Otago) for the development of the new site and a special thank you to Stephen Joe (University of Waikato) for the many (uncountable) years of maintaining the previous site.

The New Zealand Mathematical Society and the New Zealand Statistical Association are pleased to announce that the "Jones Medal for Lifetime Achievement in the Mathematical Sciences" will be awarded for the first time later this year. Awarded biennially, the medal is for "lifetime achievement in pure or applied mathematics or statistics by a person with substantial connections to New Zealand". The two Councils have agreed upon the terms of reference and we are currently waiting for the Royal Society of New Zealand for their agreement. Once this is completed, a call for nominations will be made. Despite the apparent closeness of the two organisations, as far as I am aware, this is the first formal arrangement between the NZMS and NZSA.

Charles Semple
President

EDITORIAL

Kia ora koutou

Welcome to another addition of the newsletter. We'd like to apologise for a small oversight in the last edition. Depite last year being an excellent year in terms of membership of the NZMS (with 277 members) it wasn't a record. The society enjoyed its membership heyday in the mid-nineties when membership was over 300 (335 in 1994 was the record). Thanks to John Shanks our membership secretary for this correction.

Alex James
Editor

LOCAL NEWS

AGRESEARCH

Tanya Soboleva, Paul Shorten and Kumar Vetharaniam attended the ANZIAM conference held in Queenstown in February, 2010. Paul presented a talk on "Insulin transport in skeletal muscle" and Tanya presented a talk entitled "How can a sheep recognise that she is pregnant? A mathematical model of pregnancy recognition".

Amy Van Wey attended the 4th Asia Pacific Nutrigenomics conference in Auckland in February 2010 on genes, diet and gut health. Amy has just begun her PhD on modelling microbial biofilms in the human bowel.

Tanya Soboleva hosted Professor John McNamara from Washington State University to discuss the use of a previously developed mathematical model of animal reproduction for predicting the duration of post-partum anoestrus in dairy cattle.

We also welcome Aidin Jalilzadeh to the group who is employed through the University of Otago to work on developing mathematical models of possum biocontrol.

Paul Shorten

THE UNIVERSITY OF AUCKLAND

DEPARTMENT OF COMPUTER SCIENCE

As expected, getting news from colleagues is a non-trivial task. The department has relaunched its website and I have hopes that it will be easier to extract some news items automatically.

Mark Wilson is a deputy director of the newly formed Centre for Mathematical Sciences in the Department of Mathematics (`cmss.auckland.ac.nz`). The first workshop of the new centre was held 18–20 February 2010, on algorithmic aspects of game theory and social choice, and attracted speakers from Singapore, Germany and Australia.

Andre Nies has been promoted to Associate Professor, and Mark Wilson to Senior Lecturer above bar.

The department now has around 55 PhD students enrolled.

VISITORS

Timo Ropinski, University of Muenster, Germany; Iskander Kalimullin, Kazan State University, Russia; Magne Jorgensen, Simula Research Laboratory, Norway; John Case, University of Delaware, USA.

SEMINARS

Timo Ropinski (Department of Computer Science, University of Münster) "Interactive Visual Analysis of Volumetric Data"

Felix Leder (University of Bonn) "Reverse Engineering Malware (and what to do with all the details)"

Magne Jorgensen (Simula Research Lab) "How to Become an Excellent IT-research Institute with Substantial Impact on the IT-intensive Industry"

Mark Moir (Sun Microsystems) "Experience with and Potential of Hardware Transactional Memory"

Mark Wilson

DEPARTMENT OF ENGINEERING SCIENCE

Is it really Easter already? Haven't I just written a column for the NZMS newsletter? But indeed, daylight saving is over, so it must be time for a new column to report on activities over summer.

This summer we have seen considerably more students around the place than in past years. The department employed more than 20 students to work on research projects in continuum mechanics, operations research and biomedical engineering thanks to the government's initiative to fund many more summer studentships than in the past. And with one month of semester 1 behind us, fourth year students are well into the research for their research projects.

So, our focus is on teaching once again, and the list of newsworthy items is short this time: A new book and the seminars of the last 2 months.

BOOK

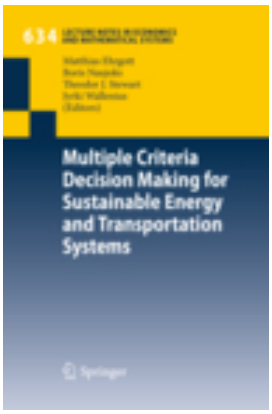
"Multiple Criteria Decision Making for Sustainable Energy and Transportation Systems". Proceedings of the 19th International Conference on Multiple Criteria Decision Making, Auckland, New Zealand, 7th – 12th January 2008.

M. Ehrgott, The University of Auckland, New Zealand; B. Naujoks, Login GmbH, Schwelm, Germany;

T.J. Stewart, University of Cape Town, South Africa; J. Wallenius, Helsinki School of Economics, Finland (Eds.).

In the twenty-first century the sustainability of energy and transportation systems is on the top of the political agenda in many countries around the world. Environmental impacts of human economic activity necessitate the consideration of conflicting goals in decision making processes to develop sustainable systems. Any sustainable development has to reconcile conflicting economic and environmental objectives and criteria. The science of multiple criteria decision making has a lot to offer in addressing this need. Decision making with multiple (conflicting) criteria is the topic of research that is at the heart of the International Society of Multiple Criteria Decision Making. This book is based on selected papers presented at the society's 19th International Conference, held at The University of Auckland, New Zealand, from 7th to 12th January 2008 under the theme "MCDM for Sustainable Energy and Transportation Systems".

2010, XVIII, 389 p., Softcover
ISBN: 978-3-642-04044-3
`http://springer.com/978-3-642-04044-3`



SEMINARS

James Deaker (Microsoft) "Yield management in digital display advertising"

Michael Leszhiner (Imperial College London) "Simulation of slot and round synthetic jets in the context of boundary-layer-separation control"

Kaj Madsen (Technical University of Denmark) "Space mapping for engineering optimization"

Golbon Zakeri (Department of Engineering Science) "Swapping generators' assets: market salvation or wishful thinking"

Andy Philpott (Department of Engineering Science) "Mixed-strategy equilibria in discriminatory divisible-good auctions"

Gavin Bell "Living in a carbon-based World: CO2 and its impact on the EU power sector"

MORE INFORMATION: The department is also publishing a newsletter, so for more information please visit: http://www.esc.auckland.ac.nz/alumni.

Matthias Ehrgott

DEPARTMENT OF MATHEMATICS

Peter John Lorimer died on February 7, aged 70. A memorial service was held on February 11 at the MacLaurin Chapel, with standing–room only for his very many friends. On March 24 Marston Conder inaugurated our series of Founders Lectures by giving a public lecture on "Symmetry and Chirality in Discrete Structures", which he dedicated to the memory of the late Professor Peter Lorimer. An obituary article is published elsewhere in this Newsletter.

Hannah Bartholomew, Bill Barton, Barbara Kensington–Miller and Mike Thomas have been awarded $ 200,000 for their Mathematics Undergraduate Teaching project.

Bill Barton (Director of our new programme in Mathematics Education) has begun a 3–year term as President of the International Commission on Mathematical Instruction (ICMI), from 2010 – 2012. On National Radio he was officially appointed as a "Talking Head" on Jim Mora's show. The radio audience wanted to know about the declining mathematical standards and numbers of first-year University students.

David Bryant will be leaving us to go to the University of Otago at the end of June. David's departure will be an enormous loss to our Department, but we wish him all the best in his new position.

Marston Conder organized and hosted a specialist workshop on "Algebraic, Topological and Complexity Aspects of Graph Coverings", which was held in Auckland on February 15–19. That workshop was attended by over 20 overseas participants and several locals (including many research students). He has been awarded a resumption of his Fellowship of the Alexander von Humboldt Foundation, and will visit the Mathematical Institute at the University of Frankfurt for the month of May.

Steven Galbraith will give an invited talk at the workshop on Computer security and cryptography, CRM Montreal, on April 12–16. And he is on the programme committee for the 15th Australasian Conference on Information Security and Privacy.

David Gauld (and others from this Department) attended the NZMRI Summer Workshop in Hanmer Springs early in January. On January 12–18 he attended the NZIMA funded workshop on Topological Quantum Field Theories and Knot Homology Theories, which had been orgnized by Vaughan Jones, Roger Fenn, and himself. On January 24–27 he attended a conference on analysis and its applications at Sultan Qaboos University in Oman, presenting an invited plenary lecture on "Foliations and non–metrisable manifolds".

Vaughan Jones is currently in Chile, visiting the Centro de Estudios Cientificos at Valdivia; and when the Concepcion earthquake occurred on Saturday February 27 he was at Talca, 100km south of the epicentre. He was on the 11th floor of a building which got shaken very violently for several minutes, with "everything bouncing like a trampoline", but he survived the experience with only minor abrasions. He had arranged with a local friend to go windsurfing at the nearest beach on Sunday February 28, but a tsunami 20m high smashed into that beach and swept 1km inland. "That would have been the ride of a lifetime .... anyway I'm happy to be alive" he said. Major aftershocks have continued, and water and electricity supplies were cut until full power was restored late on Tuesday March 2. Vaughan was later amused by an article in the leading Santiago newspaper La Tercera on Wednesday March 3 with a photograph of him, reporting him missing. A physicist was much concerned about Vaughan's safety, and as he hadn't been able to contact Vaughan, thought that he was lost. But all the time Vaughan had been in communication with his family and colleagues (including some at Auckland) by cellphone and e–mail.

Maxine Pfannkuch has been promoted within the Senior Lecturer scale.

Philip Sharp has been named as one of 3 recipients of a Science Faculty Teaching Award. This is very well deserved, and it is a suitable recognition of Philip's enormous contributions to the teaching in this Department.

Arkadii Slinko was invited to the invitation–only Dagstuhl Seminar on "Computational Foundations of Social Choice" that took place on March 7–13. He has been appointed to the Programme Committee of the COMSOC-3 that will take place in Dusseldorf in December 2010, and to the Scientific Committee member of the conference on Logic, Game Theory and Social Choice (LGS7) which will take place in July 2011.

At the 2009 NZ Mathematics Colloquium, members of this Department contributed the following talks: Noor Aishikin Adam, "The effectiveness of using dialogue as a tool in an ethnomathematical study"; Bill Barton, "A vision of senior secondary and beginning undergraduate mathematics"; John C. Butcher, "On fifth and sixth order Runge–Kutta methods"; Howard Cohl, "Closed–form–expressions and Fourier expansions for the fundamental solution of Laplace's equation in the hyperboloid model of hyperbolic geometry"; Heiko Dietrich, "On the p–groups of maximal class"; Sunanda Dixit, "Diffeomorphisms of L^2_+"; David Wen Duan, "Mathematical modelling of GnRH neurons in the rat brain"; Colm Fitzgerald, "Time–domain solutions of floating–body interactions by the generalized eigenfunction expansion method"; David Gauld, "Foliations and non–metrisable manifolds"; Annie Gorgey, "Extrapolation of boundary–value problems and parabolic partial differential equations"; Rod Gover, "Overdetermined PDE and algebraic sets"; Gulshad, "The algebraic structure behind Runge–Kutta methods"; Yousaf Habib, "The accuracy of composite general linear methods"; Emily Harvey, "Multiple timescales and complicated oscillations in intracellular calcium dynamics"; Claire Postlethwaite, "Switching on heteroclinic networks"; Muhammad Amer Qureshi, "Achieving Brouwer's law for long–time simulations of the outer solar system"; Matthew Randall, "Almost projectively Ricci–flat manifolds"; Attique Ur Rehman, "Numerical comparisons of variable–stepsize sche-mes for explicit Runge-Kutta methods"; Shafir Ur Rehman, "Detecting close approaches"; Manfred Sauter, "The regular part of sectorial forms"; Philip W. Sharp, "SATORB — a new model for satellite dynamics"; Arkadii Slinko, "Combinatorial properties of subset orders"; Michael J. Smith, "Vibration of floating and submerged elastic plates"; Sepideh Stewart, "Embodied, symbolic and formal thinking in mathematics: the case of linear algebra"; Steve Taylor, "Minimizing a convex functional to obtain a picture of a molecule on a collection of atoms"; Tom ter Elst, "The Dirichlet–to–Neumann operator on rough domains"; Wenjun Zhang, "Travelling waves in calcium models", and "Intersection of solitary pulses and periodic waves in excitable systems"; Sam Zhu, "Planarity test of graphs".

Congratulations to Michael Smith for jointly winning the Aitken Prize for the best student talk at the NZ Maths Colloquium, on "Vibration of floating and submerged elastic plates". Mike had some stiff competition!

VISITORS

Recent visitors include: Dr Willy Alangui (University of Philippines — Baguio), Mr Olivier Bernard (École Normale Superieur, Paris), Prof. Michel Broue (Université Paris —Diderot), Prof. Andreas Cap (University of Vienna), Prof. Alan Champneys (Bristol University), Prof. Persi Diaconis (Stanford University), A–Prof. Jie Du (UNSW), Dr Matthias Hammerl (University of Vienna), Prof. Olga Holtz (UC — Berkeley and TU Berlin), Dr Alison Kohout (NIWA), Prof. Vitali Liskevich (University of Swansea), Dr Feng Liu (University of California - Irvine), Prof. Aleksander Malnic (University of Ljubljana), Mr Roger Miarka (State University of Sao Paulo — Rio Claro), Prof. Pawel Nurowski (University of Warsaw), Dr Claas Roever (National University of Ireland, Galway), Dr Katja Sagerschnig (University of Vienna), Prof. Egon Schulte (Northeastern University, Boston), Dr Detlef Seese (Karlsruhe Institute of Technology), Dr Damien Stehle (University of Sydney), Dr Marcel Steiner–Curtis (University of Applied Sciences, Northwestern Switzerland), Dr Anton Stolbunov (NTNU Norway), Prof. Mina Teciher (Bar–Ilan University, Israel), A–Prof. Paul Tupper (Simon Fraser University) and Dr Christopher Voll (University of Southampton).

David Gauld, Vaughan Jones and Roger Fenn organized the workshop on Topological Quantum Field Theories and Knot Homology Theories, funded by NZIMA, which was held at Hahei on January 12–18. David Gauld and Rod Gover participated, with the following students: Tuan Chien, Sunanda Dixit, Jesse Hart, Michael Lockyer, Afshin Mardani, Matthew Randall, Nazli Uresin and Doug Wilson. In addition, six former Auckland students participated: Samuel Dillon, Vaughan Jones, Sikimeti Ma'u, Gaven Martin, Callum Sleigh and Paul Turner, with Siki-meti and Paul as invited speakers.

The Department of Mathematics has announced the establishment of a Centre for Mathematical Social Science (CMSS) and the appointment of its inaugural Director, Associate–Professor Arkadii Slinko. The CMSS will provide a focus for academic exchanges between social scientists working with mathematical or computational methodologies, and researchers from pure and applied mathematical disciplines who are investigating problems with relevance to social science. It will also facilitate cross–disciplinary supervision of research students and the teaching of inter–disciplinary courses. Students of mathematical or computational disciplines will discover new areas of application; and social scientists can learn about mathematical techniques that might be useful for their own research.

The inaugural workshop on "Algorithmic Aspects of Game Theory and Social Choice" took place on February 18–20, with participation by researchers from Australia, Germany and Singapore. The following lectures were presented: Toby Walsh, "Where are the hard manipulation problems for STV election?"; Mark Wilson, "A measure of the difficulty of manipulation of voting rules"; Geoff Pritchard, "Asymptotic analysis of a measure of strategic manipulation for scoring rules and Copeland's method"; Detlef Seese, "From decidability of theories to parameterized complexity: observations on logical ways to avoid complexity"; Fran Rosamond, "Fixed–parameter algorithms for Kemeny score"; Reyhaneh Reyhani, "Duverger's law: a general model for effects of polls on voters' behaviour"; Arkadii Slinko, "Cloning candidates as manipulation in elections"; Andy McLennan, "Coalitional bargaining: how complex is it?"; Tatiana Gvozdeva, "Weighted and roughly–weighted simple games"; Claudia Lindner, "Not everyone likes mushrooms: fair Division and degrees of guaranteed envy–freeness"; Edith Elkind, "Algorithms for safe manipulation"; Joerg Rothe, "The shield that never was: Societies with single–peaked preferences are more open to manipulation and control"; Dorothea Baumeister, "The complexity of computing minimal unidirectional covering sets"; Markus Brill, "Minimal retentive sets in tournaments".

Inga Wang and Willy Alangui have successfully completed their PhD degrees.

John Butcher has been elected as a Fellow of the Society for Industrial and Applied Mathematics (SIAM), a well-deserved and highly prestigious award.

SEMINARS

Pierre Albin (Courant Institute and IAS Princeton), "Poincaré–Einstein manifolds: renormalized integrals and index theory".

Kath Clark (Florida State University), "To use or not to use: History of mathematics in the secondary classroom".

Judy Kennedy (University of Delaware), "Inverse limits and the problem of backward dynamics in economics".

Michel Broue (Université Paris–Diderot), "Root systems for complex reflection groups".

Jie Du (UNSW), "A double Hall algebra approach to affine quantum Schur–Weyl theory".

Pawel Nurowski (University of Warsaw), "Rolling balls and the exceptional group $G2$".

Olga Holtz (UC Berkeley and TU Berlin), "Zonotopal algebra, analysis and combinatorics".

Paul–Andi Nagy "On the uniqueness of almost–Kaehler structures".

Katja Sagerschnig (University of Vienna), "Conformal structures associated to generic rank–2 distributions on 5–manifolds".

Matthias Hammerl (University of Vienna), "Holonomy reduction for Cartan geometries with applications to normal BGG–solutions".

Arnaud Brothier (Université Paris–Diderot), "Classification of maximal Abelian self–adjoint subalgebras (MASA) of a II_1 factor".

Alan Champneys (University of Bristol), "Localised patterns of lattice equations".

David Brydges (University of British Columbia), "What is Quantum Field Theory?".

Florina Halasan (University of British Columbia), "The Anderson Model and its absolutely continuous spectrum on trees".

Avner Friedman (Ohio State University), "What is mathematical biology and how useful is it?".

Detlef Seese (Karlsruhe University of Technology), "From decidability of theories to parameterized complexity: observations on logical ways to avoid complexity".

Jaroslav Nesetril (Charles University, Prague), "On the algebraic properties of graphs and homomorphisms between them".

Hinke Osinga (University of Bristol), "A continuation method for computing global isochrons".

Damien Stehle (University of Sydney / CNRS Paris), "Is lattice–based cryptography becoming practical?".

Vitali Liskevich (University of Swansea), "Some qualitative properties of solutions to second-order elliptic and parabolic equations".

Bernd Krauskopf (University of Bristol), "The mystery of chaos in the Lorenz equations".

Egon Schulte (Northeastern University, Boston), "Chiral polytopes and their groups", and "Polytopes, Symmetry, and Groups".

Grant Lythe (University of Leeds), "Stochastic dynamics and T cells".

Reyhaneh Reyhani (Computer Science Department), "A general model for effects of polls on voters' behaviour".

Christopher Voll (University of Southampton), "Representation zeta functions of groups and a conjecture of Larsen–Lubotzky".

Rod Gover "Poincaré–Einstein spaces, BGG complexes, and the curved analogue of projective polynomial systems".

Kate Patterson "An investigation into transcriptional activation in bacteria".

Arkadii Slinko "Dagstuhl and cloning candidates".

Sina Greenwood "Connected generalised inverse limits".

Feng Liu (University of California, Irvine), "Aerodynamic design and optimization using an adjoint method".

Anton Stolbunov (Norwegian University of Science and Technology), "Constructing Public-Key Cryptographic Schemes based on class group action on a set of isogenous elliptic curves".

Garry Tee

DEPARTMENT OF STATISTICS

Huge congratulations to Ross Ihaka, for being awarded the American Statistical Association's inaugural biannual Statistical Computing and Graphics Award, jointly with Robert Gentleman, for their work in initiating the R Project for Statistical Computing. R, which was born in a corridor in Auckland, is now used by millions of people worldwide and has changed the way that scientists and business professionals interact with data. Ross will receive his award at the 2010 Joint Statistical Meetings in Vancouver in August, before an audience of thousands. Congratulations, Ross!

The department is in the midst of some significant comings and goings. We are delighted that Thomas Lumley of the University of Washington in Seattle has accepted our offer of Chair in Biostatistics, and will arrive later this year. Thomas will be an enormous asset for our department.

At about the same time, the University of Washington will gain not one but two of our staff, as Sharon Browning and Brian Browning have accepted prestigious appointments there. Sharon will be a Research Associate Professor in the Department of Biostatistics, and Brian will be an Associate Professor in the Department of Medical Genetics. Sharon

and Brian have been in Auckland since 2005, and have gained international recognition for their work in statistical genetics, including jointly holding a Best Paper Award from the International Genetic Epidemiology Society for the best paper published in Genetic Epidemiology in 2007. We wish them every success in their new positions and hope we will be able to entice them back to New Zealand soon!

Thomas Lumley

We also said a reluctant farewell to senior tutor Rachel Cunliffe in November. Rachel joined our department in 2000 after a stellar student career, and has made a huge contribution to our Stage 1 team and outreach activities, including Census At School. She is currently focusing on motherhood, and the family are planning to travel overseas.

In November the department held a dinner jointly to say goodbye to Rachel Cunliffe, to mark Alastair Scott's 70th birthday, and to celebrate our 15th birthday as a separate department. Or was it mainly to guzzle enough chocolate cake to bring fortitude for the upcoming week? The following week we hosted four major outreach activities. Ross Parsonage and his team organised the annual Statistics Teachers Day, titled 'Laying foundations for inference'. This was the most successful ever, and with enrolments capped at 150 the day was well-oversubscribed by secondary school teachers from around the country. Yannan Jiang and Stephen Vander Hoorn organised the Biostatistics Workshop on Cluster Randomised Trials, with keynote speaker Martin Bland from the University of York, who presented two entertaining talks at Taupo the following week. Thomas Lumley, our professor-to-be, also presented a full-day R workshop. As if the walls of our building weren't pulsating with enough creative energy after all that, there was Girls into Science to cap it off. Making everything run smoothly throughout were our awesome team of Alexandra Miliotis and Nancy Wong from the Stats Office. Thanks to Alex and Nancy for all their hard work: they must have breathed a sigh of relief when everyone disappeared to Taupo at the end of the week.

Congratulations to Chris Wild, Alastair Scott, and Alan Lee for their success in the most recent Marsden round: a well-deserved $600K will go towards their investigations on "Efficient analysis with biased samples" over the next three years. PhD student Gustavo Amorim is about to arrive from Brazil to begin his PhD work on the project.

Our PhD students have had some notable successes. Katrina Poppe won the prize for Best Student Talk at the Australasian Biometric Conference in Taupo, and Jonathan Briggs was runner-up. Lyndon Walker won the statistics prize at the NZ Maths and Statistics Postgraduate Conference in Foxton Beach in November. Drs Debbie Leader and Derek Law successfully defended their theses: Debbie has started a Senior Tutorship at Massey, and Derek is working for Harmonic research company in Auckland. Two of our recent PhD graduates have gained lectureships in New Zealand: James Russell has just been appointed as a lecturer in biology at the University of Auckland, and Steven Miller was appointed as a lecturer in statistics at the University of Waikato last year.

And finally, Stephane Guindon and Ivan Kojadinovic have both celebrated the arrival of baby sons in the last couple of months. Welcome to Elliott Guindon and Damien Kojadinovic. This brings our departmental offspring to a total of 22 children since the year 2000 — of which 19 have been boys and only 3 girls! This latest highly significant news brings our departmental p-value to less than 0.001 against a hypothesis of equal sex ratio. Can anyone suggest a mechanism that might cause statisticians and statistical administrators, both male and female, to produce more boys than girls? Or is there just something in the departmental water cooler . . . ?

Rachel Fewster

AUCKLAND UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND MATHEMATICAL SCIENCES

The Bachelor of Mathematical Sciences (Honours) programme was introduced in semester one of 2009 and started accepting students into the Computer Science major. In semester one of 2010, the program started accepting students in the Applied Maths major. Three new staff, Hyuck Chung, Guinevere Nalder and Alex Raichev, were appointed as fixed-term lecturers at the School in February.

Neil Binnie has retired after 23 years on the staff teaching Mathematics and Statistics. Previously he had taught for 17 years in secondary schools during which time he had a year as a visiting teaching fellow in Computer Science at the University of Auckland. He maintained his interest in Secondary School Mathematics serving as the A.P.N.Z. representative on the NZQA Mathematics Advisory Group for several years and presenting regularly at NZAMT. The last four years he has been involved in a partnership with Shanghai Institute of Technology. Staff from AUT teach the third year papers in a BAppSc in Analytical Chemistry and Neil has taught a paper called Quantitative Statistics for Research. With a cohort of 70 students, this has been an interesting, challenging and rewarding experience. Neil continues with some part time teaching at AUT and in his spare time is property manager for 20 properties for the Bays Community Housing Trust.

Murray Black was awarded a Vice Chancellor's Doctoral Study Award to spend six months (semester one) working on the completion of his PhD from Deakin University in Geelong completely free of his teaching and administration activities.

Jiling Cao and Arthur Amon participated in the NZIMA Workshop on Topological Quantum Field Theory & Knot Homology Theory at Hahei (Coromandel), 12–18 January. Also, Jiling was one of plenary speakers at the International Conference on Analysis and Applications held at Sultan Qaboos University, 24–26 January, presenting a talk on Wijsman convergence.

Paul Cowpertwait joined the School in March as an Associate Professor in Analytics to spearhead the development of this new major. Paul joins us from Massey University where he had been since 1996 and a member of the Institute of Information and Mathematical Sciences.

Jeff Hunter continues on a part-time basis as Head of Research (Mathematical Sciences). In February he attended the ANZIAM 2010 conference at Queenstown and spoke on "Coupling and Mixing in Markov chains".

Two of our staff, Sergiy Klymchuk, one of the two principal investigators and Peter Watson, one of the three associate investigators have been involved with a joint 2-year project, "Transition from Secondary to Tertiary Education in Mathematics". The final report was recently submitted. Sergiy and Peter attended a conference at the University of Auckland on 11 and 12 April, called "Envisioning the Future". This was the first time ever that a conference brought together people from both the secondary and tertiary sectors to talk about the transition from secondary to university Mathematics in New Zealand.

SEMINARS

Mick Roberts (Massey University at Albany), "Models for seasonal and pandemic influenza"

Jiling Cao

UNIVERSITY OF CANTERBURY

DEPARTMENT OF MATHEMATICS AND STATISTICS

Congratulations to our PhD students Shannon Ezzat, Rachael Tappenden and Beata Faller. Shannon and Rachael have followed up their successes at the NZ Maths and Stats Postgraduate Conference by winning prizes for their talks at the NZ Maths Colloquium in December 2009. Shannon was awarded First equal Aitken Prize (for best NZ postgraduate student talk) and Rachael was Aitken Prize Runner-up. Beata was co-recipient (one of two winners among 22 entries) of the CMSA prize for best student talk at the 33ACCMCC in Newcastle (NSW) in December last year.

Congratulations to Rua Murray who has received a University Teaching Award, which was presented at the April graduation ceremony.

Congratulations to Charles Semple, who has been promoted to Principal Investigator of the Allan Wilson Centre for Molecular Ecology and Evolution (CoRE), and to Alex James, Dominic Lee and Ben Martin, who have been promoted to Senior Lecturer over the bar.

Staff changes in the department include: Neil Watson, who retired on 18 February after 36 years with the department. Neil came to us from Sheffield University via Cardiff. Just in time, Neil's book, "Introduction to Heat Potential Theory" (Mathematical Surveys and Monographs series, American Mathematical Society), which he has been working on lately, has been accepted.

Ian Coope has announced his retirement with effect from 7 May this year. Ian, who has been a valued member of the department for 31 years, will, however, maintain an association with the department after this date.

Hilary Seddon has been appointed as a Senior Tutor on a two-year contract. Hilary is a familiar face around the department, having worked as a tutor for the last six years since arriving from the UK.

Miriam Hodge and Richard Brown have been appointed to fixed-term lecturing positions, Miriam as Assistant Lecturer in Statistics on a one-year contract and Richard as Lecturer in Mathematics on a two-year contract. Both are well known in the department, Richard having been here as a post-doctoral fellow for the last two years.

Maarten McKubre-Jordens started a 2-year post-doctoral position in February to work with Douglas Bridges.

Congratulations to Ben, Rachel and young Daniel Martin who welcomed Elizabeth Claire Martin into the world on New Year's Eve.

CONFERENCES AND VISITS

John Hannah, Mike Plank, Irene David and Kathy Clark attended the Southern Right Delta conference on Teaching Undergraduate Mathematics and Statistics in Cape Town from 29 November to 4 December 2009. John, Mike and Irene are assisting on the organising committee for the next of these Southern Hemisphere conferences — the 2011 Volcanic Delta Conference, to be held in Rotorua in November 2011.

Raazesh Sainudiin visited the Angström Laboratory, Department of Mathematics, at Uppsala University, Sweden, in December 2009. He gave a talk entitled "Statistical Regular Sub-pavings in Multi-variate Density Estimation" and presented a poster on Controlled Lumped Coalescent Markov Chains for Population Genomic Inference at the First Swedish Meeting on Theory and Mathematics in Biology and Medicine, Centre for Interdisciplinary Mathematics.

Nine staff and students including Brendan Bycroft, James Degnan, Raazesh Sainudiin, Charles Semple and Mike Steel, attended the annual phylogenetics meeting (DOOM10) at the Skotel in Whakapapa during the week of 9–14 February. The popular meeting, now in its 15th year, attracted some leading US and European researchers in evolutionary biology (both biologists and mathematicians/statisticians).

Ben Martin, Shannon Ezzat, Daniel Lond and Thomas Steinke took part in the NZMRI Summer Workshop on Groups, Representations and Number Theory, which was organised by Ben Martin and Eamonn O'Brien (Auckland) and held in Hanmer Springs in early January. A separate report on the workshop will appear elsewhere this newsletter.

Alex James and Mike Plank were members of the organising committee, together with members of Otago University, of the 46th ANZIAM conference, held in Queenstown from 31 January to 4 February. David Wall, Miguel Moyers-Gonzalez and Jacquelyn Parente were also in attendance from the University of Canterbury. A full write-up on the conference will appear elsewhere in this newsletter.

Clemency Montelle has been invited by the ANR funded research group "History of Numerical Tables" in the Laboratoire d'Histoire et Philosophie des Sciences (UMR 7219) of CNRS and Denis Diderot University, Paris, France, to speak in the two-day international workshop on "The History of Numerical Tables", 22–23 March 2010. Her paper is entitled The Karanakesari: Mathematical tables for computing eclipse phenomena.

Douglas Bridges is on sabbatical during the first half of 2010. He is based at the Mathematics Department of Munich University, from January to mid-July. The visit is partially supported by a EU Marie Curie grant for the Construmath project, involving Canterbury, Munich, Padova, Uppsala, and JAIST (Japan). In March Douglas went to Kanazawa for a week, for a Workshop on Constructive Mathematics (again part of the Construmath project). En route he had the chilling experience of being awakened from slumber by lightning striking his plane.

Recent visitors include: Bruce Craig (Purdue University); Olivier Gascuel and Fabio Pardi (LIRMM, Montpellier, France); Mareike Fischer (IBIV, Vienna, Austria); Dominik Schmid (Institute of Biomathematics and Biometry, Helmholtz Zentrum, Munich, Germany); Robin Havea (University of the South Pacific); Richard Laugesen (University of Illinois); Tomas Johnson (Uppsala University, Sweden); Tim Candy (Edinburgh University).

SEMINARS

Edward Boone (Virginia Commonwealth University) "Hierarchical Zero-Inflated Poisson Regression Model for Stream Fish Distribution and Abundance"

Tomas Johnson (Computer-assisted Proofs in Analysis Group, Uppsala University, Sweden) "Dynamics of the Universal Area-Preserving Map Associated with Period Doubling"

Robert D Russell (Simon Fraser University) "Adaptive Mesh Generation and Moving Mesh Methods"

Zach Weber (University of Sydney and University of Otago) "Paraconsistent Mathematics"

Dominik Schmid (Institute of Biomathematics and Biometry, Helmholtz Zentrum, München)

"Scattered Data Approximation and Marcinkiewicz-Zygmund inequalities on SO(3)"

Fabio Pardi (LIRMM, Montpellier, France) "Distance-based tree reconstruction: the importance of earnest assumptions"

Peter Smith (University of Cambridge and UC Philosophy Erskine Fellow) "Kleene's Proof of Gödels Theorem"

Bill Barton (University of Auckland) "Have eight colleagues watch me lecture? Why would I agree to that?"

Abdulla Firag (University of Canterbury) "Statistical Analysis of Wireless Relaying Systems"

Günter Steinke

MASSEY UNIVERSITY

INSTITUTE OF FUNDAMENTAL SCIENCES (MANAWATU)

After five years of distinguished service as head of mathematics, Kee Teo has passed the baton to Bruce van Brunt, who took over as head at the start of the year. Kee has also moved to half time, from the start of April. Bruce, however, has left for his annual visit to Korea, putting Kee back in the hot seat as acting Head — but now without the corner office that came with it! Bruce returns in early June.

Other recent travel includes Matt Perlmutter, who has just returned from a three month visit to Caltech. His main project while there was the study of Poisson geometry of reduced cotangent bundles, with Jerry Marsden and Tudor Ratiu. And in August Robert McLachlan will travel to Bangalore, India to represent New Zealand at the General Assembly of the IMU.

Our warmest congratulations go to Tammy Smith, who is now Tammy Lynch: she and Sean Lynch were married on January 1st on Uretiti Beach, in Waiapu. Tammy and Sean met through bridge, and clearly make a formidable partnership, beating several grandmasters to win last year's local senior championship.

This year's Sir Neil Waters Distinguished Lecture was a great success, with more than 1200 people filling the Regent Theatre to hear Persi Diaconis. His talk "Adding numbers and shuffling cards" was a fascinating blend of mathematics and magic.

A year or more after their move was first rumoured, the statistics group finally joined us in the Science Towers at the start of this year. They seem to be well settled in now, and we're all enjoying the new close association with our statistical colleagues.

The annual IFS Postgraduate Symposium was held this month, and was a stimulating and valuable experience for all. Ting Wang (statistics) won the prize for the best plenary with her talk *Markov-modulated Hawkes process with stepwise decay*, and Luke Fullard (mathematics) won the prize for the best talk in the mathematics/statistics session with his talk *Detecting "hot-spots" in a geothermal reservoir*. Brigid Betz-Stablein (statistics) was highly commended for her talk *Disease mapping techniques applied to glaucoma visual field datasets*.

A prize fund has been established in memory of Marijcke Vlieg, who passed away suddenly last September. Marijcke was devoted to all areas of teaching, but developed particularly close relationships with her extramural students and often went well beyond the call of duty to help them with their studies. Accordingly, the Marijcke Vlieg-Hulstman Prize will be awarded to the top first year extramural student majoring in mathematics. Anyone who wishes to donate to the fund may do so by following the "Donate Online" link from foundation.massey.ac.nz.

SEMINARS

Persi Diaconis (Stanford University), "Adding Numbers and Shuffling Cards"

Susan Holmes (Stanford University), "Comparing Trees using Distances, Trees and Multidimensional Scaling".

Anna Korolko (University of Bergen), "Sub-pseudo-Riemannian Geometry"

Charles Semple (University of Canterbury) "Negative Correlation in Graphs and Matroids"

IFS POSTGRADUATE SYMPOSIUM — MATHEMATICS TALKS

Luke Fullard "Detecting 'hot-spots' in a geothermal reservoir"

Megan Gregory "Proving n-dimensional linking in complete n-complexes in $(2n+1)$-dimensional space"

Tim White "XMP: Parallel branch and bound for maximum parsimony phylogeny"

Fleur McDonald "Multi-symplectic integration"

Christopher Tuffley

INSTITUTE OF INFORMATION AND MATHEMATICAL SCIENCES (ALBANY)

MATHEMATICS NEWS

The Albany campus of Massey University hosted the New Zealand Mathematics Colloquium in December 2009. A report appears elsewhere in this newsletter.

Albany mathematicians were well-represented at the 2010 ANZIAM meeting held in Queenstown during early February. All six (Robert McKibbin, Graeme Wake, Alona Ben-Tal, Winston Sweatman, Carlo Laing and Mick Roberts) gave talks on their current work. Current issues in applied mathematics research, teaching, postgraduate student support and the various awards were discussed at the ANZIAM AGM. Next year, the event is to be held near Adelaide, South Australia. Alona and Robert are now Secretary and Treasurer, respectively, of the NZ Branch of ANZIAM.

Following ANZIAM 2010, the annual MISG meeting at RMIT in Melbourne was fairly well-attended, considering that only four problems were available. Massey had a very visible presence. Four staff and three postgraduate students from Albany took part. All of the staff (Graeme Wake, Winston Sweatman, Barry McDonald and Robert McKibbin) and one graduate student (Haydn Cooper) moderated problems; and two graduate students from Albany (Syaza Latif and Manarah Eraki) and two from Palmerston North (Luke Fullard and Fleur McDonald) were part of the problem-solving teams. We had had a pre-MISG discussion about the problems at Albany so that those who were unable to attend could have their ideas taken along by those who were to be there. Reports are now in the process of being written up for publication.

Gaven Martin has been invited to visit the Euler Institute (St Petersburg) and the Hausdorff Institute (Bonn).

In January Mick Roberts visited the National University of Singapore, and gave an invited talk as part of the "Workshop on Epidemiology of Infectious Diseases: Emerging Challenges". Mick was selected as part of the NZ delegation to "An International Conference on Mathematics, Evolution, and Development", March 21 to 28, Shanghai, funded by MoRST.

Graeme Wake has been appointed as Auckland Board Member for the Fulbright NZ Alumni Association, and is enjoying joining the diplomatic circuit, though the meeting with US Secretary of State, Hillary Clinton was cancelled because of the Haitian earthquake.

Chanakarn Kiataramkul has returned to NZ for a further period of research on the fetal-growth study, funded by a grant held by Graeme from the CoRE National Research Centre for Growth and Development. Dr Teeranush Suebcharoen, also from Bangkok, has returned as a one-year Postdoctoral Fellow and is working with Graeme on nonlocal problems arising in cell-growth models.

Maarten Jordens has successfully completed his PhD thesis. Maarten was largely supported by an NZIMA PhD scholarship and was supervised by Gaven Martin. We now look forward to having three successful Mathematics PhD students graduating in April: Maarten, Joanne Mann and Kevin Byard.

STATISTICS NEWS

In November 2009 Marti Anderson spent a week at the US National Centre for Ecological Analysis and Synthesis (NCEAS) in Santa Barbara, California, as part of a think tank working group entitled "A synthesis of patterns, analyses, and mechanisms of beta diversity along ecological gradients". She will have two more visits there before the end of 2010, with the next trip scheduled for April.

In December, Marti gave a one-week international course on multivariate analysis at Flinders University in Adelaide, South Australia, for biologists and ecologists, hosted by Sabine Dittman at Biological Sciences.

In January, it was time to do the diving for the annual biodiversity surveys of rocky reef fish communities along the north-east coast of New Zealand for Marti, Adam Smith and colleague Russell Millar from the University of Auckland. With the help of the RV Hawere (University of Auckland's research vessel) and skipper, Brady Doak, the trip was completed in record time this year. This is the tenth year running - quite a nice observational dataset for examining natural patterns in spatial and temporal variation of fishes.

Barry McDonald gave a talk "Estimating the lifetime of marine concrete" at the Engineering Mathematics and Applications Conference, in Adelaide, 7-10 December 2009.

Mat Pawley featured in Massey News for his work for the Ministry of Fisheries. He calls it: "getting paid to go to the beach", but others call it: "counting shellfish across the entire North Island". Mat has developed some nice methods of spatial sampling that will yield good estimates of the state of play for shellfish in many coastal areas.

Congratulations to Beatrix Jones and Danny Walsh on the birth of baby Sadie on 14 October!

Assistant Professor Byungsoo Kim, from the Department of Data Science at Inje University, Korea, is visiting IIMS for the 2010 year, and doing some research with Barry McDonald.

Paul Cowpertwait has resigned to take up a position as an Associate Professor at AUT.

Our PhD students have been busy. Katharina Parry had a successful confirmation for her PhD research (Bayesian Inference for Traffic Network Models). Oliver Hannaford is currently working on a boat near the Three Kings Islands with colleagues Vincent Zintzen and Clive Roberts from Te Papa as part of a Marsden project to get video footage and also some collections of fish species, going down to depths of 1200 m. They're quantifying the changes in fish community structure with depth and latitude across New Zealand and have already uncovered what look like two new species of hagfish. Marie Fitch gave a talk on her PhD research (High-dimensional graphical models) at the Australian Young Statisticians Conference in September 2009 and was relieved to note she wasn't the oldest "young" statistician!

We look forward to welcoming Kirsten Rodgers who has landed a Massey University doctoral scholarship to work with Marti Anderson; Kirsten will be joining us to start her PhD in April of this year. The topic for her work is: "Natural tags to reveal 'sources' and 'sinks' for New Zealand's coastal marine species" and will include interactions with our colleagues Nick Shears (University of Auckland) and Tom Trnski and Wilma Blom (Auckland War Memorial Museum).

SEMINARS

Persi Diaconis (Stanford) "Mathematics and magic tricks"

Olga Holtz (Berkeley, TU Berlin and IAS Princeton) "Introduction to compressed sensing"

Jack Lissauer (NASA - Ames) "The search for earth-like planets"

Helmut Maurer (Munster) "Theory and applications of bang-bang and singular control problems"

Andy McIntosh (Leeds) "Biometrics: Insect inspiration from the bombardier beetle"

Robert McKibbin "Data analysis and optimisation for the Perth Basin Geothermal System in Western Australia – an MISG 2010 problem"

Shaun Cooper and Marie Fitch

UNIVERSITY OF OTAGO

DEPARTMENT OF MATHEMATICS AND STATISTICS

The Department has had a busy summer period with several researchers visiting. The Relativity group at Otago hosted several guests: most notably, they enjoyed the visit of Prof. Bernd Schmidt, AEI Potsdam, who spent two months at the Department collaborating with Prof Jörg Frauendiener on topics in relativistic elasticity and otherwise contributing significantly to the research done in our group on the conformal structure of spacetimes.

Dr Mihály Kovács hosted Prof. Stig Larsson for three weeks in January working on finite element approximation of stochastic PDEs as well as Prof. Vidar Thomee who visited for five days. Prof Thomee also gave a seminar talk on "Time Discretization of Parabolic Equations by Laplace Transformation and Quadrature". Prof Thomee and Prof Larsson are both from Chalmers University, Gothenburg Sweden

Kristelle Roidot visited from the University of Burgundy in Dijon to collaborate on integrable equations.

Prof Jörg Frauendiener in the third week of January visited San Francisco, USA to participate in a Meeting of the AMS, where he gave a talk on "Twistors and the conformal field equations" in the workshop on "Parabolic geometry, integrable systems and twistors". At the Humboldt Conference held this year in Dunedin he contributed a talk with the title "Gravitational waves — a new window to the universe".

Mihály Kovács has had a co-authored paper acceptedinthe SIAMJournal on Numerical Analysis on the"Finite element approximation of the linear stochastic wave equation with additive noise".

SEMINARS

Prof Vidar Thomee (Chalmers University of Technology), "Time Discretization of Parabolic Equations"

Dr David Rideout (Perimeter Institute for Theoretical Physics Waterloo, Canada), "Indications of de Sitter Spacetime from a Discrete Causal Dynamics"

Dr Kokou Dossou (University of Technology Sydney), "Numerical and semi-analytical methods for the solution of the Maxwells equations"

Bernd Schmidt (Max Planck Institute for Gravitational Physics (retired) Potsdam), "Existence theorems in elasticity theory"

Dr Laimonis Kavalieris "Minimum Description Lengh (MDL) "

Dr Florian Beyer "On second-order Fuchsian equations"

Prof Bruce Craig (Purdue University), "The calibration of two antimicrobial susceptibility tests using interval censored data with measurement error"

Dr Jörg Hennig (Albert-Einstein-Institut, Potsdam, Germany), "Can the spin-spin repulsion and the gravitational attraction of two black holes balance each other? "

Dr Susan Alber (Dept of Preventative and Social Medicine), "Effects of Hyperparameters in a Normal Model with Conjugate Prior' '

Prof Colin Fox (Dept of Physics), "Accelerated Gibbs Sampling of Gaussian Distributions"

Lenette Grant

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS

We welcome back Keith Allen as a senior tutor this year. He will be helping with the teaching of some of the first year mathematics papers. We also welcome back Roger Hosking as a visitor to the department. Roger was a former Head of Department and is visiting from early February to mid-year. During his stay, he intends to complete writing of a book.

Student numbers this year are looking healthy which is always a welcome state of affairs.

Last November, Kevin Broughan gave an invited lecture titled "The holomorphic flow of the Riemann Zeta function" at the Riemann Hypothesis Day held at the University of Auckland.

Yuri Litvinenko returned in late February after spending three months in Germany under a research fellowship from the Alexander von Humboldt Foundation. In April, Yuri hosts Terry Forbes from the University of New Hampshire as a visitor for a week.

We also had other short term visitors earlier in the year. This included Andy Drizen who visited Nick Cavenagh and Graeme Hocking who visited Tim Stokes.

Travellers across the Tasman were Nick who visited the University of Queensland and Tim who made his annual trip to Melbourne and Hobart in December and January. Also across the Tasman is Stephen Joe who is currently in Sydney. He is there on study leave working with collaborators at the University of New South Wales.

SEMINARS

G. Hocking (Murdoch University), "Coating deformations in the jet stripping process".

A. Drizen (Queen Mary, University of London), "Finding uniformly distributed Steiner triple systems".

N. Cavenagh, "Cryptography, latin squares and cutting up triangles".

Stephen Joe

VICTORIA UNIVERSITY OF WELLINGTON

SCHOOL OF MATHEMATICS, STATISTICS AND OPERATIONS RESEARCH,

Te Kura Mā-tai Tatauranga, Rangahau Pūnaha

Some excellent news for us and the rest of the University is that we have appointed a new Statistical Consultant: Dalice Sim started work on 1 March 2010. Dalice is a Kiwi who did her PhD with Norman Breslow (University of Washington), and more recently spent several years in Canada. We, and all Dalice's new clients, are very pleased that she chose to come to Wellington now that she is back in NZ!

Further excellent news is that Carolyn Chun has been awarded a two-year International Research Fellowship from the National Science Foundation. The NSF is one of the preeminent funding bodies for science in the USA. Their International Research Fellowships (see: `http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5179`). are extremely competitive and are designed to support international collaborative opportunities for researchers in the early stages of their careers. Carolyn arrived at Victoria in August 2008, after completing her PhD at Louisiana State University, to do research in matroid theory. Her stay is currently supported by Geoff Whittle's Marsden grant. With the sponsorship of the NSF, she can extend her stay for another two years. Long enough for plenty of matroid theory, but more importantly, enough time for her collaborators to teach her the rules of cricket!

Carolyn also attended the Joint American Mathematical Society and Mathematical Association of

America (AMS MAA) meetings in San Francisco in January 2010. There were thousands of other mathematicians there of course, but no one else from VUW this time, so thanks to Carolyn for representing us. Geoff Whittle went to the Oberwolfach workshop in graph theory in February 2010 and also spoke at a special session in matroid theory at the American Mathematical Society meeting in Lexington Kentucky at the end of March.

The School has been awarded a University Learning and Teaching Fund grant to host a pilot Maple TA project, led by Peter Donelan. The project will trial use of the application in first-year calculus and statistics courses as well as for university preparation courses and student learning support. Peter would be keen to hear about experience with Maple TA in other universities.

As noted in the last newsletter, Matt Visser's Scientific American article 'Black stars, not black holes' (October 2009, Carlos Barcelo, Stefano Liberati, Sebastiano Sonego, Matt Visser) has been translated into other languages, and the list keeps getting longer. Matt notes it "can now be read in Spanish, French, German, Italian, Russian, Chinese (both mainland and Taiwanese), and Japanese." Even more impressively, Matt can read it in quite a few of those languages himself!

Estate Khmaladze has recently been appointed consultant to a 2 year United States NSF-funded project, "Recovery of Functions via Moments: Hausdorff case" awarded to researchers at West Virginia University. Also, Estate is about to have a two-month visit (ending mid June 2010) from Alok Goswami (ISI, Kolkatta and Series A editor of Sankhya).

Shirley Pledger started off the MSOR Colloquium series for 2010 in mid-March, speaking to an absolutely packed lecture theatre about Fuzzy Ecological Communities. Shirley explained how to use mixtures for clustering and provided analogues of multidimensional scaling, ordination and correspondence analysis. More information about past and future MSOR Colloquia is available from: `http://msor.victoria.ac.nz/Main/MSORColloquia`

John Haywood chaired and presented at the Econometrics Session of AMW 2010, the 15th Australasian Macroeconomics Workshop hosted by the Reserve Bank of New Zealand and the School of Economics and Finance, Victoria University of Wellington, 8–9 April 2010. In a completely different area of application, John was also a contributing author on a presentation at the NZ Entomological Society Conference in early April, concerning the morphological variation in an endemic New Zealand ant species under varying levels of competition with an invasive wasp. John hasn't yet worked out any connections between ants, wasps and macroeconom-ics ...

Several staff supervised students on short-term research projects over the summer. Details of all the topics covered were illusive, but Franziska Broell and Ernestynne Walsh worked with Nokuthaba Sibanda and Shirley Pledger respectively. Franziska and Nokuthaba used hierarchical Bayesian models to compare rates of Caesarean section deliveries across all District Health Boards in New Zealand, with data extracted from the Ministry of Health National Minimum Dataset. Ernestynne and Shirley worked on writing an R package for open-population capture-recapture models, incorporating age structure and heterogeneity of capture and survival probabilities. The package will be launched at a workshop at the University of Kent on 5 July 2010, immediately before the International Conference on Statistical Ecology, where Shirley is involved in two presentations, as is Richard Arnold — not the same two talks, but there is an overlap, presenting some joint work.

In other student news, Lisa Woods was awarded a Victoria Doctoral Assistantship. Lisa started her PhD on the 1 March 2010, researching Bayesian QTL mapping with Nokuthaba Sibanda and Richard Arnold as supervisors. Congratulations to Kylie Reiri, an applied statistics Masters student, who has been awarded a Te Tipu Putaiao (Maori Knowledge) Fellowship from FoRST. Kylie is one of four Victoria students, and one of only nine nationally, to win this award. Under the supervision of Richard Arnold and Adele Whyte (Biological Sciences), Kylie will conduct a statistical analysis of temporal and spatial variation in the Ngati Kahungunu fisheries catch. Her aim is to provide an improved view of the fisheries data currently collected in the Ngati Kahungunu rohe (boundaries), including reporting results at a finer geographical scale. Kylie will report back to Ngati Kahungunu stakeholders, iwi, scientific and industry groups, and to government.

Preparations are continuing within the School for the 4th Asia-Pacific International Symposium on Advanced Reliability and Maintenance Modeling (APARM 2010), led by the General Co-Chair Stefanka Chukova. Hopefully some readers will be planning to come to Victoria University in December (2–4), and further details, including a Call for Papers, are available at the Symposium web site: `http://msor.victoria.ac.nz/Events/APARM2010/`.

Following on from the August 2009 news about our School's 3–0 Laser Force victory over a team from Politics and International Relations, a rematch

was held in early April 2010. The result, however, was identical: another 3–0 scoreline to MSOR! Our sharp-shooting Head of School (Megan Clark) again played a key role, and this year we unleashed Carolyn Chun as our secret weapon, who is known to be a crack shot at paint ball.

One other organised sporting activity included some MSOR statisticians catching prawns in the rain (yes, really: see the attached photo of Ivy Liu, Richard Arnold and Nokuthaba Sibanda) at the International Biometric Society Australasian Region Conference (Biometrics on the Lake), held in Taupo from 29 Nov to 3 Dec 2009. The conference programme covered a wide range of subjects in biostatistics, with Victoria researchers (including Shirley Pledger as well) presenting work on Capture-Recapture methods, Bayesian inference in genetics and analysis of multiple response data in contingency tables.

Ivy, Richard and Nokuthaba at the Biometrics conference.

SEMINARS

For abstracts for these seminars (including the MSOR Colloquia), put an appropriately-old date in the School's seminar web page: `http://msor.victoria.ac.nz/Events/Seminars`.

John Hitchcock (University of Wyoming and CWI), "Learnability, Randomness, and Lower Bounds"

Taise Santiago C. Oliveira "Catalan 'Traffic' and integrals on the grassmannian of lines"

Charles Little (Massey University), "A new characterisation of planar graphs"

Jean-Marie Aubry "State estimation in quantum homodyne tomography with noisy data"

Asher Kach (VUW), "Euclidean Domains and Euclidean Functions"

Shirley Pledger (VUW), MSOR Colloquium, "Fuzzy Ecological Communities"

Gaven Martin (Massey Albany), "The Governing PDE's for nonlinear materials science, conformal geometry and the Hilbert Smith Conjecture"

Angel Ruiz (Vice President of ICMI from Costa Rica), "Challenges for Math Teachers' preparation. A perspective from Latin America"

Tolga Bektas (University of Southampton), "The Pollution-Routing Problem"

John Haywood

WELLINGTON STATISTICS GROUP

Members of the Wellington Statistics Group (WSG), a local group of the New Zealand Statistical Association (NZSA), were involved in organising the NZSA 2009 Conference, held in September 2009. Some details were included in the VUW entry for December's NZMS newsletter and a full report (with some pictures) is available from this NZSA web page: `http://nzsa.rsnz.org/Newsletter70/conference.htm#NZSA_2009_Conference`

In addition to the NZSA 2009 Conference, other talks given to WSG since the last NZMS newsletter entry are:

John Maindonald (Australian National University) "Mining a Cricketer Data Archive"

Vijay Nair (University of Mi-chigan, USA) "Statistical Inverse Problems in Network Tomography and Monitoring Quality of Service Characteristics in Networks"

Ross Ihaka (University of Auckland and the R Foundation) "R: Past and Future History"

Further details (abstracts, etc) of these and all previous talks can be found on the NZSA Local Groups web page: `http://nzsa.rsnz.org/local_groups.shtml`. That web page also contains contact details for WSG, names of sponsors (to whom we are very grateful!), and details of forthcoming talks.

The WSG Convenor (David Harte) has been out of NZ quite a bit recently, so talks have been relatively rare. In fact, we'd very much like to hear from anyone in the Wellington region who would be keen to take over the WSG Convenor's role from David. Don't be shy!

If anybody is visiting Wellington at a time coinciding with a talk, then you are most welcome to attend. No registration or fee 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.

Dr John Haywood

INDUSTRIAL RESEARCH LIMITED

Aruna Awasthi attended the ICTP Regional School on Physics at the Nanoscale in Hanoi.

Bridget Ingham gave an invited talk on "Analysis of SAXS/SANS data to obtain representative morphologies of nanomaterials" to the Australian Neutron Scattering Symposium in Sydney.

Nicola Gaston gave an invited talk on "Curious structures of elemental metals" to the 2010 Australia and New Zealand Humboldt Conference in Dunedin.

Shaun Hendy appeared on TV3 News on an item entitled "Lack of R&D funding holding back Kiwi inventors" on 19 January. Shaun now also has a regular physics slot on Radio New Zealand Nights. His first interview with Brian Crump was on Thursday 25 January.

Roger Young retired at the end of January. Roger has been at Applied Maths for nearly 24 years and has made significant contributions in the areas of geothermal modelling, finite elements and wave propagation in solids. Roger was also our resident authority on films, books, and music, and tells us he is looking forward to being able to devote more time to these pleasant distractions. Nicola Gaston, Bridget Ingham and Shaun Hendy attended the ICONN nanotechnology conference in Sydney in February, presenting work on the coalescence of gold nanoparticles, the superheating of gallium clusters, and the rolling of droplets on superhydrophobic surfaces.

Applied Maths also hosted a visitor from the Free University Berlin in February, Dr Dirk Andrae, who is collaborating with Nicola on a computational study of molecular knots. This was funded through an application to the ISAT scheme administered by the Royal Society. We also are hosting Doreen Mollenhauer for two months. Doreen is a PhD student from the same group as Dirk, and will be working with Nicola on the adsorption of multivalent molecules onto gold nanoparticles or graphene.

Shaun Hendy and Nicola Gaston attended a MoRST meeting on High Performance Computing in February together with Andrew Gavriel. Shaun, Nicola and Bridget attended the 34th Condensed Matter and Materials Meeting at Waiheke Island.

Bridget has just left to spend two weeks working at Brookhaven Lab near New York, and then at the Australian Synchrotron in Melbourne. In early April, she will take part in a 100 km charity walk for Oxfam near Taupo. Several of the team have been accompanying her on long weekend training walks for this event, with the result that aches and pains have been the main topic of discussion on Monday mornings ...

VISITORS

Professor Heinz Gäggeler, Professor for Radiochemistry, University of Bern, and Head of the Laboratory for Radio- and Environmental Chemistry, Paul Scherrer Institut, Switzerland gave a seminar on "From Mendeleev's principle to Einstein's relativity: News from the chemistry of superheavy elements".

We also had a visit from Jean-Marie Aubry, for the Université of Paris-Est, who gave a seminar entitled "State estimation in quantum homodyne tomography with noisy data".

Warwick Kissling

NIWA

Sharleen Harper is working on an ESR funded project with Aroon Parshotam and Graham McBride on infectious diseases and climate change. Sharleen is also working on catchment modelling and campylobacter runoff in streams. Aroon Parshotam is working on infectious diseases and climate change and models of sediment transport through the stream network. Chris Palliser is working on the catchment model, ROTAN and (with Graham McBride) on a project for the Christchurch City Council on the microbial risk analysis of pathogens in sewage water.

I regret to inform you that Peter Read passed away of cancer last October. Peter was based at Massey University in Palmerston North since 1980. A number of us, namely Kathir Padmanathan, Aroon Parshotam, Nicolas Robidoux and Andrei Korobeinikov had much pleasure working with Peter on formulating and solving his economic system models. Peter had an absolute commitment to science and the environment and the power of quantitative methods in informing policy. Peter was well ahead of his time.

Aroon Parshotam

IN MEMORIUM PETER JAMES LORIMER

Even though it was not unexpected, the death of Emeritus Professor Peter Lorimer came as a great shock to the many people whose lives he had touched. He was first of all a mathematician, and moreover a mathematician with great flair and imagination. He was also a family man, a socially-responsible citizen, a lover of the arts and crafts of his country, and a lover of literature. The two authors of this short tribute each had their lives enriched by knowing Peter, doing mathematics with Peter, and enjoying his company and friendship.

Peter was born in Christchurch on 16 April 1939 and died at Auckland City Hospital on 7 February 2010. He studied for a BSc at the University of Auckland from 1957 to 1959, gaining a double major in Pure and Applied Mathematics. The following year he earned an MSc with First Class Honours in Mathematics. He then received a Commonwealth Scholarship to enable him to study at McGill University in Montreal, where he completed a PhD in 1963 under the supervision of Professor Hans Schwerdtfeger, with a thesis entitled "A study of T_2-groups". After holding a temporary academic appointment at McGill, Peter returned to New Zealand to a Lecturership in Mathematics at the University of Canterbury. In 1966 he was appointed as a Senior Lecturer at the University of Auckland, where he worked until he retired. He was promoted to Associate Professor in 1973 and to a personal chair in 1991.

Peter and Ruth Lorimer were married in 1968. They have three children Rachel, Nicole and Daniel, and a grandson Lincoln, born a year before Peter's death. They built a home for themselves in Kauri Glen Road, Northcote and remained there throughout their married life. Their home, in an idyllic setting and surrounded by native plants, has over the years been the scene of many departmental and other gatherings.

Peter's research interests were very broad, and included questions about the abstract structure of groups, as well as applications of group theory, especially to geometry. He published some sixty papers, many in top flight journals such as the Proceedings of the American Mathematical Society, Journal of Algebra, Journal of Combinatorial Theory, Journal of the London Mathematical Society and the European Journal of Combinatorics. He also published in general interest and local journals like the

new Mathematical Intelligencer and the Mathematical Chronicle (now the Journal of the New Zealand Mathematical Society).

Peter is perhaps best known for his research on finite projective planes, and particularly the construction and classification of non-classical planes, such as translation planes, and other projective planes of given types. He also made valuable contributions to the field of combinatorics known as Ramsey Theory, concerning the complexity of smallest networks of a given type under certain conditions. Peter found some of the very few Ramsey numbers that are known. In more recent years his work focussed on combinatorial graphs possessing a great deal of symmetry, motivated by his interests in crystals and quasicrystals. He was able to use his extensive knowledge of group theory to construct and classify such graphs with particular properties.

The high quality of Peter's research was recognised in 1988 by his election as a Fellow of the Royal Society of New Zealand. Peter was rightly pleased about this, especially since the number of pure mathematicians who had gained this distinction at that time was only a handful. Shortly afterwards, Peter's distinguished research attainments and leadership role were further recognised through the award of his personal chair. In 1997 he was awarded the New Zealand Mathematical Society's Research Award, "for a lifetime of achievements in mathematical research, especially for his contributions to the application of group theory in geometry and combinatorics, and to the structure and classification of finite projective planes".

Peter was passionate about mathematics and about the teaching of mathematics. He had his own style, and was constantly in search of new ways to explain the deep ideas, fundamental to mathematics, with freshness and approachability. He constantly sought new ways to relate 'pure' mathematics with applications of mathematics. Even in a course that Peter had taught for many years, he would never be content to repeat the work unchanged because he would always have new insights and new ideas about the subject. His aim was always to distill the essence of a topic, introduce what he saw as the key concepts, and then fold in more technical aspects once the key concepts were understood. For example, he felt that vectors should always be introduced geometrically before dealing with their representation by algebraic coordinates, and there is a lot of merit in that approach. Immediate application is often put ahead of understanding, to the detriment of the subject as whole (as well as the applications). Peter was always keen for students to be able to have both understanding and practical ability.

Peter was also a person with the highest possible social ideals. He lived his ideals as well as espousing them. Besides an intense interest in contemporary social and political issues, he was a keen student of the turbulent history of our country and especially of the New Zealand wars.

Peter always enjoyed artistic pursuits and taught himself wood-carving skills. He especially loved furniture made from Kauri and other New Zealand wood. The magnificent carved sign MATHEMATICS adorning the headquarters of the Auckland department was a gift from Peter, and of course the carving was his own work. We believe the design of the original cover of the departmental research reports was selected by Peter. He was fascinated by such designs coming out of traditional Maori artwork.

He greatly contributed in many ways to the life and work of the Auckland Mathematics Department, especially making his colleagues think about important issues such as equity, and the quality of courses. It was difficult to watch his health decline over the last 10 years, but we all admired his strength of character and the continuing interest he took in education, research and people, right up to his last days.

Peter took early retirement on medical grounds in the late 1990s, after complications following heart surgery. He suffered brain hypoxia, leaving him with severe symptoms of Parkinson's disease. Peter's health steadily declined over the last ten years, until he died in February, aged 70. He is survived by Ruth, Rachel, Nicole, Daniel, and Lincoln.

John Butcher and Marston Conder

FEATURES

THE 2010 ANZIAM MEDAL

The ANZIAM Medal is the premier award offered by ANZIAM. It is currently awarded biennially. This year it was awarded to Dr Robert Anderssen, CSIRO, Canberra. The presentation was made at the 46th ANZIAM Applied Mathematics Conference in Queenstown, NZ on 3rd February 2010.

CITATION FOR THE 2010 ANZIAM MEDAL

DR ROBERT ANDERSSEN

Robert Anderssen's research career is broad and wide-ranging. He has operated across the ever-expanding spectrum of Applied and Industrial Mathematics, since receiving his first doctorate in 1968 from the University of Adelaide. His work is noted world-wide for its originality and depth. His contributions have had, and are having, a high impact across applied mathematics, industrial mathematics, science, the profession (ANZIAM and the Australian Mathematical Society) and the community generally.

The crucial importance of the research of Dr Anderssen is its utility in a wide and diverse range of applications: from the current work in cell-signalling models of patterns in plants; the extension of rheological interconversion methodology; to the stability analysis of first-kind Volterra integral equations; the ordinary differential equation modelling or gene silencing — in the rapidly growing area of epigenetics; the differentiation of matrix functionals — a core piece of theoretical mathematics; algorithms for determining the regularisation parameter for robust smoothing splines; derivative spectroscopy; resolution enhancement; and dilational Hilbert scales/interpolatory inequalities. Going back to only 1973, the Web of Science has listed more than 950 citations of his work, which underscores the significance of his creative work.

Robert Anderssen is a strong supporter and worker for the profession of Applied and Industrial Mathematics. At both state and national levels, he is a regular contributor to ANZIAM and the Mathematics -in-Industry Study Groups, and he helped ANZIAM, and its fore-runner the Division of Applied Mathematics to establish and sustain a Special Interest Group (SIG) in Computation (CTAC). He has strongly supported the expansion of the ANZIAM umbrella to embrace both countries (Aust/NZ), and he has been active so as to ensure Mathematics has a stronger voice in national and science forums. He served as Chair of the Division of the Australian Mathematical Society (AustMathSoc) and separately as President of the Society.

He is now continuing his research and wider activities productively into "retirement" as a Post Retirement Research Fellow in CSIRO Mathematics, Informatics and Statistics, Canberra, having served CSIRO through to the role of Research Chief Scientist until 2007. His influence on, and nurturing of, emerging young scientists is well-known and many can attest to his encouragement at critical points of

their careers. He is always willing to participate in mathematical meetings, and he can be relied upon to give an outstanding and enthusiastic presentation. On many occasions he has acted as judge to select the prize winner for the Best Student Presentation at the NSW/ACT ANZIAM Mini-meeting. He performs this difficult and sensitive task with considerable awareness, sensitivity and flair, such that all participants, and not just the prize winners, are given positive encouragement and their confidence materially uplifted.

Robert Anderssen has lived the life of the committed Applied and Industrial Mathematician, and he has demonstrated through his enthusiasm, energy, and sustained achievement that he well and truly meets the criteria for this award. The selection panel unanimously recommends that Dr Robert Anderssen be awarded the ANZIAM medal for 2010.

On behalf of ANZIAM
Graeme Wake (Massey University Auckland)
Jim Hill (University of Wollongong)
Charles Pearce (University of Adelaide)

2010 SIR NEIL WATERS LECTURE

The 2010 Lecturer was Persi Diaconis of Stanford University, and his talk "Mathematics and Magic Tricks" attracted a capacity crowd of 300 at Massey University, Albany, on 13 January and more than 1200 people at the Regent Theatre, Palmerston North, on 14 January. He opened by performing a trick that he invented as a teenager (a pack of cards is shuffled, thrown to the audience, 5 of whom cut the deck and take a card; Persi asks those with a red card to stand up, whereupon he names the 5 cards) to great delight. The rest of the hour was spent explaining the mathematics behind the trick, de Bruijn sequences, and their other applications, most notably to the "smartpen". Most of Palmerston North's Magic Circle were there, eagerly taking notes, and were awe-struck that Persi had toured with the great Dai Vernon. (I was awe-struck that Persi's wife, Susan Holmes, was taught by Grothendieck.)

The Lecture was hosted by the Institute of Fundamental Sciences and the Institute of Information and Mathematical Sciences, Massey University, and sponsored by the Royal Society and by the NZMS. Persi Diaconis visited New Zealand courtesy of the NZMRI to speak at the summer workshop.

Robert McLachlan

INDUSTRIAL MATHEMATICS

A report by Professor Graeme Wake on the activities he was involved in via the OECD thrust in Industrial Mathematics, 2007–9. Graeme Wake is Professor of Industrial Mathematics at Massey University, Auckland, and Director of its Centre for Mathematics-in-Industry since 2006. He was Director of the ANZIAM MISG in Auckland for three years 2004-6.

INDUSTRIAL MATHEMATICS: "ON THE CREST OF A WAVE"

The quote above comes from Professor John Ockendon FRS, Founding Director of the Oxford Centre for Collaborative Applied Mathematics (OCCAM) which was formally launched in mid-2009, having earlier received major support from Saudi Arabian based funders (King Abdullah University of Science and Technology). John made this very apt statement in his opening remarks at the European Conference in Industrial and Applied Mathematics in London in mid-2008.

The recent growth of activity in Industrial Mathematics (and Statistics) world-wide is really remarkable, with a wide variety of degree programs, study-groups, consulting frameworks, etc in existence. These activities frequently overlap and are adapted to take aboard the local circumstances. Europe and North America clearly lead in terms of the scale of activity, but there are both flourishing and developing activities here and in our South-East and Northern Asian neighbours. Our own ANZIAM Mathematics-in-Industry Study Group (MISG) continues to flourish and to move around the region at about three yearly intervals. In 2010 it moved from the University of Wollongong to RMIT University in Melbourne. The very successful 2010 MISG was held in early February under a team ably led by Associate-Professor John Shepherd of RMIT.

You may ask "Why is this happening now?" Perhaps it is another timely thrust towards applications driven by the demands of technology, and often encouraged by governments who see this as a key underpinning framework for advancement in a highly technical world. Whatever it is, there are a lot of opportunities for us in our own contexts.

During 2007-09, the Organisation for Economic Cooperative Developments (OECD) Global Science Forum (GSF) conducted a major review of Industrial Mathematics world-wide. Both Australia and New Zealand are of course member countries of the OECD. The first report followed a year later, after an initial gathering was held in Germany in early 2007 (which Professor Tim Marchant from the University of Wollongong attended). The OECD report is an excellent overview document. See: `http://www.oecd.org/dataoecd/31/19/42617645.pdf`.

Following the publication of this first report, the GSF formed an Experts Working Group to review and report on the various mechanisms used to further activities in Industrial Mathematics around the world. The purpose of this was to provide a blue-print which groups interested in proceeding could follow. I was privileged to represent Australia and New Zealand on this small working party, thanks to a nomination by Australia. This short article represents in part my reporting back to the community. The Experts Group's report can be found on: `http://www.oecd.org/dataoecd/47/1/41019441.pdf`. It is an evolving document and is updated regularly as new activities are reported.

Graeme Wake

NEW COLLEAGUES — ASTRID AN HUEF

Astrid an Huef has recently been appointed as Professor of Pure Mathematics at the University of Otago. Astrid obtained her PhD from Dartmouth College (USA) and has come to Otago from the University of New South Wales in Sydney. Her chief research interests are in functional analysis, in particular in the operator algebras associated to various types of dynamical systems. Her research involves collaborations with colleagues from Australia, the USA, the UK and Brazil, who are all keen to come and visit New Zealand.

Lenette Grant

CONFERENCES

REPORT ON THE 2009 NEW ZEALAND MATHEMATICS COLLOQUIUM

Tuesday 8th–Thursday 10th December, 2009
Massey University, Albany

This year's New Zealand Mathematics Colloquium was hosted by the Institute of Information and Mathematical Sciences at Massey University's Albany Campus. The ninety-two participants were treated to 5 plenary addresses, more than 60 contributed talks and 12 posters! A range of topics was covered. The presentations were excellent.

The plenary lectures were:

Apéry sequences, modular forms, and series for $1/\pi$
Shaun Cooper
Massey University, Albany

Modelling mutation rates from molecular pedigree data
Michael D Hendy, NZMS lecturer
The Allan Wilson Centre for Molecular Ecology and Evolution, Massey University, Palmerston North

Slippery Issues in Nano and Microfluidics
Shaun Hendy
MacDiarmid Institute for Advanced Materials and Nanotechnology

Modelling a developmental cell invasion process
Kerry Landman, ANZIAM lecturer
University of Melbourne

The geometry and topology of arithmetic hyperbolic 3-manifolds
Alan Reid, NZIAS lecturer
University of Texas

The local organising committee are very grateful for all the support that we received. Substantial contributions towards speakers' costs were made by Australian and New Zealand Industrial and Applied Mathematics (ANZIAM), the New Zealand Institute for Advanced Study (NZIAS) and the New Zealand Mathematical Society (NZMS) who each sponsored a plenary lecture. Hoare Research Software Ltd. contributed to the conference packs.

NZMS funds were also used to support student registrations. This year there were 22 participants in the Aitken Prize competition for the best student presentation. There were two winners: Shannon Ezzat (University of Canterbury) and Michael J. Smith (University of Auckland) with a highly commended talk by Rachael Tappenden (University of Canterbury). Springer have generously given a book to each of these winners.

The NZIAS provided a most enjoyable Welcoming Reception on the Tuesday night at the end of the first day. In this relaxed environment, away from the venue for the main lectures, the Poster Session was held. A considerable amount of time and effort had been put into preparation of the posters and they made an impressive display.

This is the first time that the Colloquium has been held at Massey University's Albany campus and local mathematicians enjoyed showing their colleagues around. We appreciate the support and facilities provided by the Albany Campus of Massey University. In the latter days of the conference many enjoyed the magnificent view from the new library building that opened during the week. A dinner cruise on the Hauraki Gulf, in perfect weather, was another highlight of the Colloquium.

Winston Sweatman

ANZIAM

The 46th Applied Mathematics Conference was held between the 31st of January and the 4th of February at the Rydges Hotel in Queenstown, NZ. There were 9 invited speakers and 144 talks (including both student and non-student).

Talks covered a wide range of topics in applied mathematics including fluid flow, financial derivatives, hearing in insects and mammals and had both a dedicated biology stream and a dedicated optimisation stream. There was an overall excellent standard of work presented, which was effectively communicated to the audience with a good level of enthusiasm.

At the conference dinner awards were given out to Lewis Mitchell (University of Sydney) who won the Cherry Prize for best student talk, Prof. Larry Forbes (University of Tasmania) who won the Cherry Ripe Prize for the best non-student talk, Alexander Badran (University of Wollongong) was awarded the A. F. Pillow Applied Mathematics Top-up Scholarship and Dr Robert Anderssen was awarded the ANZIAM Medal.

Top Left Image: Lewis Mitchell Receiving Cherry Prize from Miguel Moyers-Gonzalez and Tim Marchant. Top Right Image: Prof. Larry Forbes. Bottom Left Image: Alexander Badran awarded A F Pillow Top-up Scholarship. Bottom Right Image: Dr. Robert Anderssen receiving the ANZIAM Medal from Graeme Wake and Tim Marchant.

It was a very social event and the organising committee, co-chaired by Boris Baumer and Alex James, couldn't have picked a better location — Queenstown is breath-taking and the weather was amazing. This helped on the Tuesday afternoon off where people were able to group together over a range of activities including hiking, a boat trip and a winery tour.

This was my first year attending an ANZIAM conference, so I was unsure what to expect when I arrived in Queenstown, however I came out of the trip feeling refreshed and enthusiastic about my work thanks to the great amount of energy and standard of work at this conference, the excellent organisation and the support offered by the people I met.

Nicole Walters

NZMRI 2010

Eighty mathematicians descended on the small north Canterbury town of Hanmer Springs for this year's NZMRI Summer Workshop in January. The workshop attracted participants from as far away as Iran, Brazil and South Africa, and there were thirty students from New Zealand and elsewhere. The topic was Groups, Representations and Number Theory. Six distinguished mathematicians each gave three lectures:

Martin Bridson, Oxford: Groups that want to be free; Michel Broué, Université Paris VII: Local representation theory of finite groups and cyclotomic algebras; Persi Diaconis, Stanford: Probability, combinatorics and group extensions; Roger Howe, Yale: Representations of the general linear group, an algebraic perspective; Gus Lehrer, Sydney: Knot invariants, Hecke algebras and cellular algebras; Marcus du Sautoy, Oxford: Through the looking glass: groups from a number-theoretic perspective.

Marcus du Sautoy also gave a public lecture on "Music: the act of sounding mathematics", which was attended by over a hundred people.

Lectures were held in the morning, so afternoons were free for participants to soak in the hot pools or explore the many walking tracks in and around Hanmer. On the rest day, David Gauld led a group of people on a climb up Mt Isobel (1324 metres).

The workshop was organised by Ben Martin (Canterbury) and Eamonn O'Brien (Auckland). Next year's workshop, on Dynamical Systems, will be held in Raglan from January 9–14. See: `http://www.math.canterbury.ac.nz/NZMRI2011/` for more information.

Ben Martin

STUDENT CONFERENCE REPORTS

MATHEMATICS IN INDUSTRY STUDY GROUP 2010, MISG

Report by Nurul Syaza Abdul Latif, Massey University, Auckland

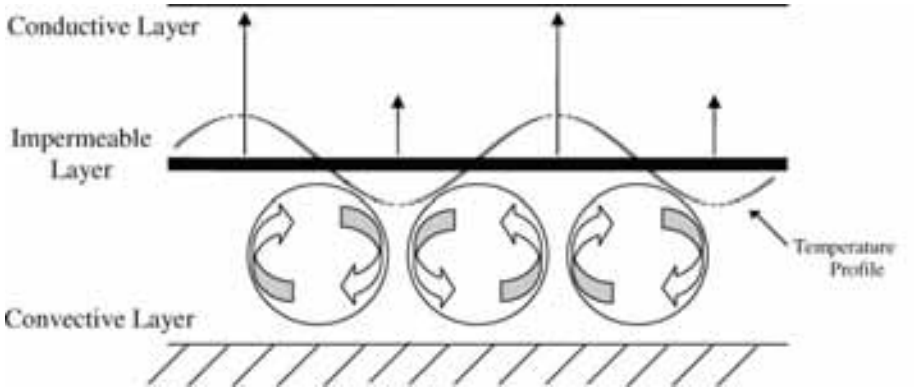
MISG 2010 was held on 6–12 February 2010 at RMIT Melbourne. There were four industry problems but the geothermal one caught my eye. On the first day, Dr Frank Horowitz (School of Earth and Environment, University of Western Australia)and Prof. Robert McKibbin (Massey University Auckland) gave some briefing about geothermal energy. We discussed some issues that can take into account a model of geothermal energy based on the hot sedimentary aquifer in the Perth Basin. The next day, we were divided into groups with different tasks. I was involved in the study problem of the temperature gradient through the surface. Dr Neville Fawkes (University of Western Australia) was the moderator in the task group and he gave some ideas on how to solve the problem which was given to us. Based on that, we tried to plot the graphs on how the temperature changes with the depth and tackled it with some variable parameter values (e.g. thermal conductivity). I was involved in this task group until the end of MISG.

MISG really gave me new knowledge and experience that I could not get anywhere. It did open my eyes on how mathematics formulas and theory can be applied in the real world. Besides that, I also got to know new friends and lectures from all over Australia and New Zealand. MISG is a great study group to be involved in. I am definitely going to MISG 2011!

Report by Fleur McDonald – Geothermal Data Analyis and Optimisation

In this problem the goal was to assess the economic feasibility of extracting geothermal power from the deep sedimentary Perth Basin of Western Australia. The Perth Basin is a porous medium, meaning that it is permeated by an interconnected network of pores which are filled with fluid. In this case, water. Hence a flow of water is created below the surface.

Within this problem I worked along with a few others on the subproblem of detecting heat flux variation on the surface. In other words, we tried to determine the magnitude of the temperature variance on the surface due to convection and the velocity of the flow.



Simplified Diagram of the Perth Basin

A simplified version of the Perth Basin (see Figure 1), containing two main layers, was used to model the problem. The layers are a purely conductive layer just below the surface and the deeper convective layer, where we assume the Rayleigh number is high enough to allow fluid convection. In between these two layers is a thin impermeable layer stopping flow of water between the conductive and convective layers. We assume that all the rock below the convective layer is impermeable and therefore not important for this problem.

Convection in the deeper layer causes a temperature profile as shown above. At areas of upflow, where the arrows in the conduction zone are large, the temperature will be at a maximum. Conversely at areas of downflow, where the arrows are small, the temperature will be at a minimum. In all other areas the temperature will be in between these two extremes. The temperature profile will then be conducted through the conduction zone towards the surface. Therefore enabling us to determine whether or not different temperatures could be detected at the surface.

In solving this problem we set up the associated Robin boundary value problem and solved this analytically, concluding that temperature variations at the surface were not likely to be detected.

I really enjoyed my time at the MISG and learnt a lot in the week, considering I didn't know anything about this topic beforehand. I would definitely consider attending another MISG in the future.

Report by Haydn Cooper of Massey University, Albany

This year was the first year that I have attended the annual "Mathematics in Industry Study Group" (MISG), and was the first year the Royal Melbourne Institute of Technology (RMIT) held the event.

This year the study group ran from 7–12 February and tackled four industry-provided problems. The participants nominally divided up into four groups, each focusing on a separate problem. Each 'team' was lead by three moderators, two 'professionals' and one 'student'.

I was in the team working on the problem brought forth by the DSTO on "Influence Diagrams To Support Decision Making", as a student moderator (the only one from NZ). In fact all the moderators in this team were from New Zealand: Winston Sweatman, Graeme Wake, and me.

In fact, it's worth noting how well we New Zealanders represent ourselves at these events: even if we didn't have a huge number of participants, we had a moderator on all but one of the teams, and had quite a number of students attending.

The project question my team focused on was perhaps the least well defined one, asking for methods to help with the use and understanding of influence diagrams; but that didn't stop our team of brilliant mathematicians taking a crack at it.

We demonstrated means of: calculating the flow of influence over time; determining steady states within any influence structure; finding hidden 'agents' within the diagram; and of deciding whether the

diagram was a worthwhile representation of the real word. Overall we succeeded in providing the industry representatives with a lot of solid ideas from which to move forward.

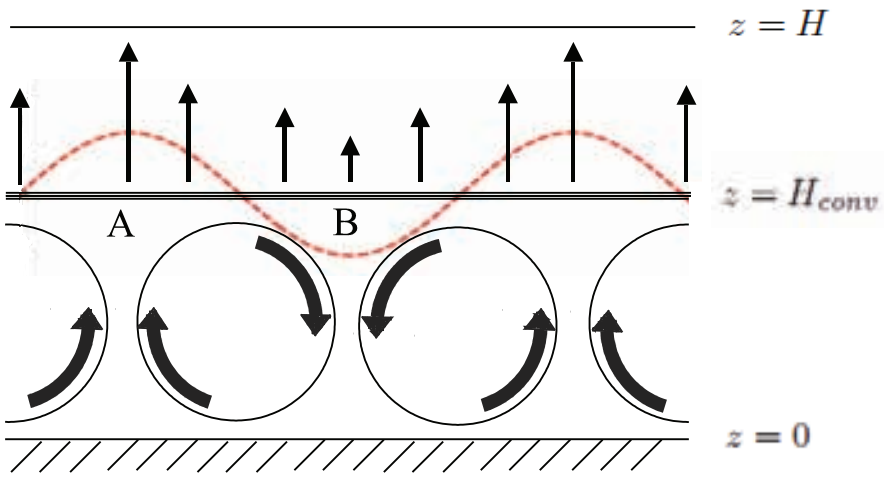
This workshop was a very worthwhile experience, and I highly recommend it to anyone considering attending in the coming years, as I intend to. It was great being a part of mathematics put to work in the 'real world', something generally lacking in my area of study.

And the extra experiences on the side make for a really memorable event having to declare half the final project presentation a "(Graeme) Wake free zone" being among the highlights.

Thank you NZMS, I couldn't have done any of this without your generous support.

Report by Luke Fullard, Massey University, Palmerston North

MISG 2010 was held at RMIT University, Melbourne over the 7th–12th February 2010. Four interesting projects were presented: a study of brain signals during epilepsy, analysis of pigments in phytoplankton, influence diagrams for decision making, and a geothermal energy problem. Personally I worked on the geothermal energy problem. The overall goal of this problem was to assess the economic feasibility of extracting geothermal power from the Perth Basin – a relatively cool geothermal reservoir when compared to New Zealand resources. We approached this problem by considering a selection of sub-problems that the group came up with. Associate Professor Neville Fowkes and a small group, including myself, worked on the sub-problem of detecting 'hot spots' from the surface. A brief description of this problem is given below.



The figure above is a schematic of the heat transfer problem. We assume that at some depth below the ground surface there is an impermeable layer of rock, and take this depth to be $z = 0m$. The ground surface is at some height $z = H$ above this bottom layer and is also considered impermeable. Inbetween these two layers there is sandwiched a third impermeable layer at height $z = H_{conv}$. We assume that the Rayleigh numbers in these zones are such that in the lower zone, between $z = 0$ and $z = H_{conv}$, the fluid is able to convect. For this reason this shall be called the convection zone. The zone above the convection zone, that is, the zone defined between $z = H_{conv}$ and $z = H$ will be called the conduction zone. In this conduction zone we have heat transfer by pure conduction only, there is no convection in this zone.

The convection of fluid in the lower convection zone will have the effect of modifying the temperature profile horizontally across the middle boundary at $z = H_{conv}$. At areas of upflow, such as point A in the figure, the temperature will be at a maximum. At areas of downflow, such as point B we will find a lesser temperature. This horizontal temperature profile will then be conducted towards the surface through the conduction zone. The question we attempted to answer was would this profile be detectable from the surface, thus giving us the underground convection pattern and a better place to drill to obtain the geothermal energy.

In the three days that we spent working on this problem we were able to set up and solve analytically the associated Robin boundary value problem. We concluded, based on the geometry of the Perth Basin and the likely temperature of the geothermal resource, that temperature variations at the surface were unlikely to be detected.

The week at MISG was very beneficial for me. I found the challenge of tackling a new problem in a short amount of time very refreshing and motivating. I had previously had little experience with convection and higly appreciated the new concepts that I learnt. It was also a great privilege working with people of such great experience, Neville Fowkes and Robert McKibbin, as well as the industry contact Frank Horowitz.

I wish to thank the NZMS and ANZIAM for providing the financial support to enable me to attend this study group. I look forward to MISG2011 with anticipation.

NEW DIRECTIONS IN GEOMETRIC GROUP THEORY WORKSHOP

Report by Haydn Cooper of Massey University, Albany

The "New Directions in Geometric Group Theory" workshop ran from the 14th to the 18th of December (2009), at the University of Queensland in Brisbane, Australia. Attending this was a new experience for me, being the first workshop, conference, or otherwise, that I have been to outside of New Zealand.

It was a very worthwhile, informative and enjoyable workshop, focusing on geometric group theory with a palpable attempt to demonstrate new areas of research within the field, and connections between it and many other branches of modern mathematics.

I found of particular interest the talks by: Darryl Cooper on marked length spectrums; Moon Duchin on the limit shapes of groups; and Walter Neumann on part of classifying groups up to quasi-isometry.

In between the talks I also managed to get in some worthwhile discussion with several researchers who've done work relevant to my research.

This workshop also coincided with an entertaining public lecture given by Darryl Cooper on "Numbers: From -1 to 2 raised to the power of infinity". And our Australian hosts even found time over the event to provide an Aussie barbecue.

This workshop was very informative and has given me new inspiration and ideas in several things I am working on. An enjoyable experience all round, even if I did have to suffer little vegemite tubs in the conference bags.

My thanks go to IIMS and (especially) the NZMS for funding my travels and attendance to this great event.

NOTICES

2011 NZIMA / NZMRI SUMMER WORKSHOP — DYNAMICAL SYSTEMS

January 9–14 2011, Raglan, New Zealand

Organisers: Vivien Kirk, Rua Murray, Arno Berger

Web: `http://www.math.canterbury.ac.nz/NZMRI2011/`

We are pleased to announce that the 2011 NZIMA/NZMRI Summer workshop will be held in Raglan, organised around exciting contemporary themes in Dynamical systems. In the established tradition of these meetings, the workshop will feature short courses of lectures by outstanding invited speakers, with plenty of time for informal interaction in relaxing surroundings.

INVITED SPEAKERS

Vitaly Bergelson — Combinatorial ergodic theory
Marty Golubitsky — Coupled systems, symmetry and synchrony breaking
Yannis Kevrekidis — Multiscale computation
Bernd Krauskopf — Numerical methods and visualisation for dynamics
James Meiss — Hamiltonian dynamics
Hinke Osinga — Numerical methods and visualisation for dynamics
Martin Wechselberger — Multiple timescale dynamics

PARTICIPATION

The workshop is aimed at the general mathematical community, and attendance by graduate students is particularly encouraged. In keeping with the mission of the NZMRI to foster mathematical research in New Zealand, participation is free for New Zealand based mathematicians.

Arrival: in time for lunch on Sunday, 9 January 2011.
Departure: after lunch on Friday, 14 January 2011.
(Optional) A bus from Auckland to Raglan will be provided for delegates.

PRELIMINARY REGISTRATION OF INTEREST

By email: `rua.murray@canterbury.ac.nz`

NZMS COLLOQUIUM 2010

The 2010 New Zealand Mathematical Society Colloquium is to be held at the University of Otago, Dunedin, in the period 6–9 December 2010. Further details will be available on the website of the Mathematics and Statistics Department: `http://www.maths.otago.ac.nz`

WORKSHOP ON COMPUTATIONAL TOPOLOGY AND DYNAMICS

Friday 13 – Sunday 15 August, 2010
University of Canterbury
Organiser: Professor Konstantin Mischaikow (Rutgers University)
Local organisers: Ben Martin, Rua Murray, Mike Plank (Canterbury)

The workshop will be on theory, methods and applications of computational homology to problems in dynamical systems. The main emphasis will be on nonlinear dynamics, but from a topological and combinatorial framework. Examples of applications to topics from Biology, Materials Science, Fluid Flow, Image Processing and Granular Flow will be given, depending on the interests of the participants.

The workshop will showcase new computational methods for dynamical systems, and will provide an opportunity for local researchers to learn about new developments and talk with international experts.

We actively encourage participation from graduate and senior undergraduate students. There will be limited funding to help cover the travel and accommodation expenses of New Zealand students. Please contact Ben Martin `B.Martin@math.canterbury.ac.nz` by 1 July if you want to apply for support.

Apart from Mischaikow, other speakers include:

Tomas Gedeon (Montana State University)
Tomek Kaczynksi (Sherbrooke University)
William Kalies (Florida Atlantic University)
Hiroshi Kokubu (Kyoto University)
Marian Mrozek (Jagiellonian University)
Hiroe Oka (Ryukoku University)
Robert Vandervorst (Frei Universitat Amsterdam)

(all to be confirmed).

For more information, contact Ben Martin `B.Martin@math.canterbury.ac.nz`.

DR MARIJCKE VLIEG-HULSTMAN PRIZE FUND

On 28 September 2009 our colleague Dr Marijcke Vlieg-Hulstman passed away suddenly while at work in her office. It was a great loss to the mathematics group that she had been part of for so many years.

In discussions with her family it has been decided to establish a fund in memory of Marijcke that will be used to award an annual prize for extramural mathematics students at Massey University. Although she was devoted to all areas of teaching, she developed particularly close relationships with her extramural students and often went well beyond the call of duty to help them with their studies. Extramural students work hard for many years, often in difficult circumstances, to complete their studies, and many of them attain outstanding results. Recognition and reward for their achievement is a just way to remember Marijcke.

Please make a donation to the fund at `http://foundation.massey.ac.nz`.

All donations to Massey University Foundation made within New Zealand are tax deductible up to the maximum limit set by the Inland Revenue Department. A tax receipt will be issued for all gifts (including anonymous gifts).

MINUTES OF THE 2009 NZ MATHEMATICS COLLOQUIUM BUSINESS MEETING

4.30 pm, Tuesday 8 December 2009
Massey University, Albany

Present. Robert McKibbin(chair), Winston Sweatman(secretary), Rua Murray, Boris Baeumer, Tom ter Elst, Tatiana (Tanya) Evans, Mick Roberts, Charles Semple, Shaun Cooper, Miguel Moyers, Peter Fenton, John Butcher, Allison Heard, Alex James, Claire Postlethwaite, Garry J. Tee, Matthew Randell, Howie Cohl, Chris Tuffley, Manfred Sauter, Geoff Whittle, Stephen Marsland, Tim Stokes, Igor Boglaev, Tammy Smith, Shaun Hendy, Steve Taylor, Wilf. Malcolm, Robert McLachlan, Graham Weir, Graeme Wake, David Gauld, Rami Elbeltagi, Maarten McKubre-Jordens, Rachael Tappenden

1. **Apologies**

   Apologies were received from Rick Beatson, Kevin Broughan, Marston Condor, Peter Donelan, Stephen Joe and Gaven Martin.

2. **Minutes of the 2009 NZ Mathematics Colloquium Business Meeting**

   The minutes of the the 2008 NZ Mathematics Colloquium Business Meeting were accepted (moved Robert McKibbin, Winston Sweatman).

3. **Matters arising from the minutes**

   dealt with below.

4. **Report of 2008 Colloquium**

   This was circulated. Rua Murray commented that the meeting had returned a small profit which had been divided between the two organisations involved (AustMS and NZ Mathematical Colloquium).

5. **Report of 2009 Colloquium**

   Winston Sweatman reported the details mentioned in the 2009 Colloquium booklet, namely that there will be 5 plenary addresses and more than 60 contributed talks including 22 contending for the Aitken prize, there are 12 posters in the poster session and in total there are 92 registrants for the Colloquium.

   The Colloquium organisers have been aiming to break even.

   The meeting expressed its gratitude for the Colloquium organisation to date.

6. **Forthcoming Colloquia**

   Peter Fenton confirmed that the 2010 meeting would be at University of Otago. University of Auckland is scheduled to host the meeting in 2011, this is to be confirmed next year. Mick Roberts reported that Jeff Hunter had requested at the HoD's meeting that AUT should also be considered as a possible venue. It was suggested that AUT members should confer with their counterparts at the University of Auckland.

   The DELTA 2011 conference was mentioned. The Colloquium should be timetabled to fit in with this meeting and not overlap.

   Meetings beyond 2011 were discussed but no firm arrangements made. Massey Manawatu was mentioned as a possibility for 2012 and Canterbury as a possibility for 2013. It was suggested that if there were to be several meetings in the Auckland region then perhaps the hosting of the Colloquium among universities should be unequal to maintain the previous proportion (one third of meetings be held in the South Island).

7. **NZMS and NZ Mathematics Colloquium**

   The closer involvement of the NZMS in the NZ Mathematics Colloquium was suggested. This may involve the transfer of any surplus made by Colloquia through the NZMS to fund other mathematical activities, a precedent having been the funding of student travel to go to the Colloquium embedded in ICIAM from the 2003 Colloquium float.

   The meeting approved a proposal (Charles Semple, Rua Murray) that

- Finances of the New Zealand Mathematics Colloquium are run through the books of the NZMS.
- The New Zealand Mathematics Colloquium is now called the New Zealand Mathematical Society Colloquium.
- There should be a NZMS Council member on the Organising Committee.

The meeting closed at 4.50pm.

THE JONES MEDAL

This year the Royal Society is introducing a new medal into its suite of medals. This Medal is to be known as the "Jones Medal for Lifetime Achievement in the Mathematical Sciences", in honour of Sir Vaughan Jones, 1990 Fields Medallist.

The Medal will be awarded biennially, for the first time in November this year, for lifetime achievement in pure or applied mathematics or statistics by a person with substantial connections to New Zealand.

Nominations for the inaugural award close on 30 June 2010.

Nomination forms (essentially requiring a nomination statement of up to 1000 words and a complete CV of the nominee or applicant) are available on the Royal Society website at:

`http://www.royalsociety.org.nz/Site/funding/MedalsAwards`

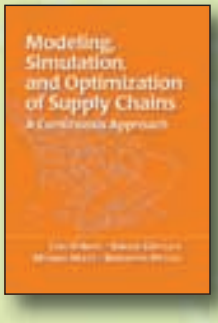
New Applied Math Titles from SIAM

www.siam.org/catalog

Modeling, Simulation, and Optimization of Supply Chains: *A Continuous Approach*

Available JUNE

Ciro D'Apice, Simone Göttlich, Michael Herty, and Benedetto Piccoli



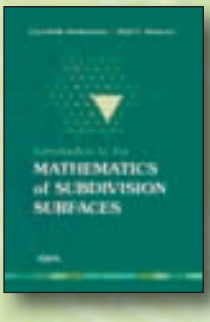
This book offers a state-of-the-art introduction to the mathematical theory of supply chain networks, focusing on those described by partial differential equations. The authors discuss modeling of complex supply networks as well as their mathematical theory; explore modeling, simulation, and optimization of some of the discussed models; and present analytical and numerical results on optimization problems.

June 2010 · Approx. x + 206 pages · Softcover · ISBN 978-0-898717-00-6
List Price $69.00 · SIAM Member Price $48.30 · OT121

Introduction to the Mathematics of Subdivision Surfaces

NEW

Neil F. Stewart and Lars-Erik Andersson



This book provides a careful and rigorous presentation of the mathematics underlying subdivision surfaces as used in computer graphics and animation, explaining the concepts necessary to easily read the subdivision literature. It also organizes subdivision methods in a unique and unambiguous hierarchy in order to provide insight and understanding.

2010 · xxiv + 356 pages · Hardcover · ISBN 978-0-898716-97-9
List Price $75.00 · SIAM Member Price $52.50 · OT120

Primer on Optimal Control Theory

NEW

Jason L. Speyer and David H. Jacobson

Advances in Design and Control 20

The performance of a process can be enhanced when the most effective controls and operating points for the process are determined. The authors provide a rigorous introduction to analyzing these processes and finding the best modes of control and operation for them. It makes optimal control theory accessible to a large class of engineers and scientists who are not mathematicians.

2010 · xiv + 307 pages · Hardcover · ISBN 978-0-898716-94-8
List Price $89.00 · SIAM Member Price $62.30 · DC20

The Geometry of Random Fields

Robert J. Adler

Classics in Applied Mathematics 62

Originally published in 1981, this remains an important text for its coverage and exposition of the theory of both smooth and nonsmooth random fields; closed form expressions for various geometric characteristics of the excursion sets of smooth, stationary, Gaussian random fields over N-dimensional rectangles; descriptions of the local behavior of random fields in the neighborhoods of high maxima; and more.

2009 · xxii + 280 pages · Softcover · ISBN 978-0-898716-93-1
List Price $85.00 · SIAM Member Price $59.50 · CL62

Lectures on Stochastic Programming: *Modeling and Theory*

Alexander Shapiro, Darinka Dentcheva, and Andrzej Ruszczynski

MPS/SIAM Series on Optimization 9

Optimization problems involving stochastic models occur in almost all areas of science and engineering. Their existence compels a need for rigorous ways of formulating, analyzing, and solving such problems. This book focuses on optimization problems involving uncertain parameters and covers the theoretical foundations and recent advances in areas where stochastic models are available.

2009 · xvi + 436 pages · Softcover · ISBN 978-0-898716-87-0
List Price $119.00 · MPS-SIAM Member Price $83.30 · MP09

Fundamentals of Radar Imaging

Margaret Cheney and Brett Borden

CBMS-NSF Regional Conference Series in Applied Mathematics 79

Radar imaging is a mathematically rich subject with many interesting applications and a large variety of challenging, mathematical open problems. The goal of this book is to provide mathematicians with the background they need to work in the field, building on the foundation of the underlying partial differential equations. Focus is on showing the connection between the physics and the mathematics.

2009 · xxiv + 140 pages · Softcover · ISBN 978-0-898716-77-1
List Price $59.00 · SIAM Member Price $41.30 · CB79

All prices are in US dollars.

TO ORDER: Shop online at *www.siam.org/catalog*

Use your credit card (AMEX, MasterCard, and VISA) by phone: +1-215-382-9800 worldwide, fax: +1-215-386-7999, or e-mail: siambooks@siam.org.
Or send check or money order in US dollars to: SIAM, Dept. BKNZ10, 3600 Market Street, 6th Floor, Philadelphia, PA 19104-2688 USA.
Members and customers outside North America can also order through SIAM's distributor, Cambridge University Press, at www.cambridge.org/siam.

SIAM® SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS 4/10

THE NEW ZEALAND MATHEMATICAL SOCIETY (INC.)

APPLICATION FOR FINANCIAL ASSISTANCE

Please fill in where appropriate

Name of Applicant: .....

Address: .....

.....

.....

email: .....

Academic Affiliation / Official Status / Present Position:

.....

NZMS Status: Ordinary member ..... Student member .....

Other (give details) .....

Signature: ..... Date: .....

Type of assistance sought	Amount
(a) Student Travel Grant	.....
(b) Research Grant: conference/travel/other	.....
(c) Grant from South Pacific Fund	.....
(d) Conference/Workshop Organisation	.....
(e) Other (please specify below)	.....

.....

.....

Estimated total expenditure: .....

Date of expenditure: .....

Other sources of assistance sought/approved (please specify below):

.....

.....

- Estimated total expenditure (please include a breakdown of this expenditure, e.g. conference fees, travel, accommodation, etc.)

  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .

- List all previous support of this kind you have received from the NZMS in the past five years. (Please note that the society has a total funding cap of $ 1000 per student over the course of their studies)

  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .

- Please give your reasons for making this applications and the plans you have for spending the grant if your application is successful:

  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .

- Please list any supporting documents or other evidence (attached to your application):

  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .

- Supporting statement from Supervisor, Head of Department or person of responsibility.

  . . . . . .
  . . . . . .
  . . . . . .
  . . . . . .

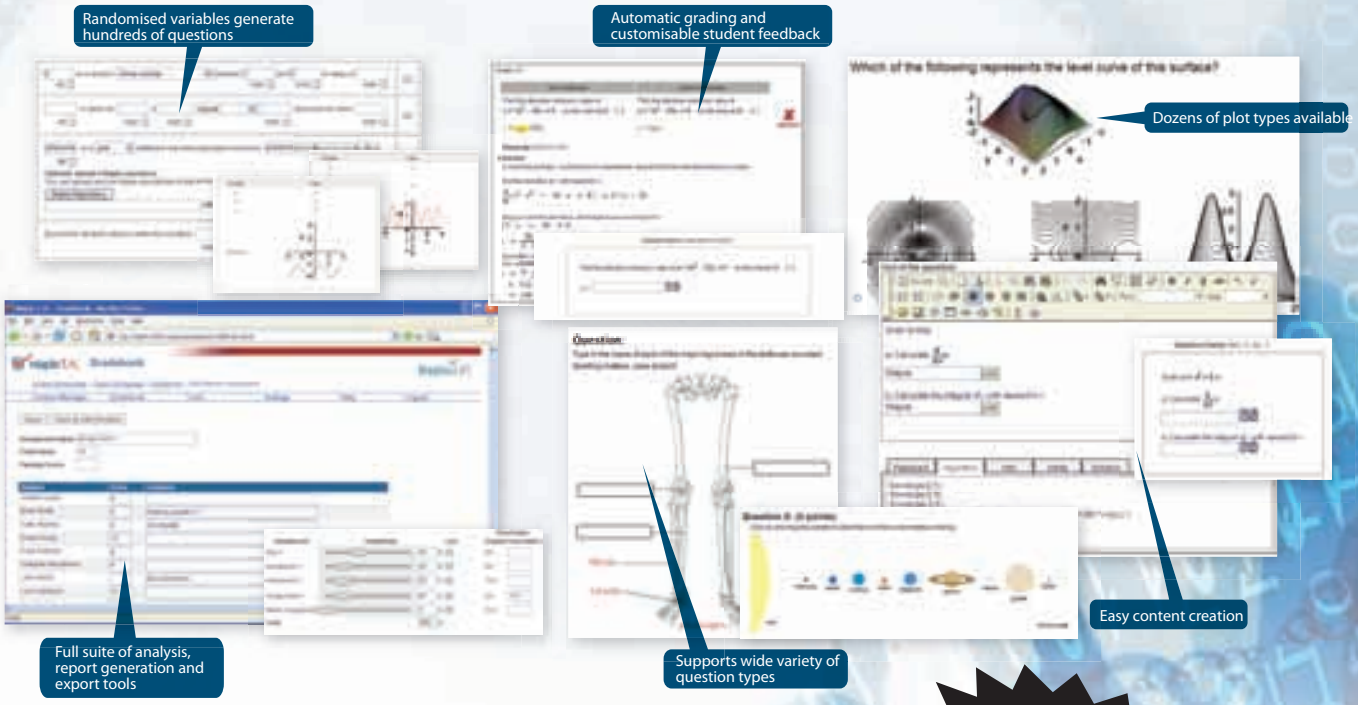
Please send this application (and any supporting documents or other evidence) to:

Dr Winston Sweatman, Secretary, NZ Mathematical Society,
Institute of Information and Mathematical Sciences,
Massey University at Albany,
Private Bag 102 904,
North Shore 0745.

The NZMS Council normally considers these applications at its meetings in July and November each year, but applications may be considered at other times in exceptional circumstances.

Test, Test, Test and Never Mark Again!

Request your free Maple T.A. Trial Now!



New Maple T.A. Content for Calculus 1 & 2 Courses - Email Now

Maple T.A. automatically does the marking for you.

- Uses conventional mathematical notation in questions and in student responses.
- Supports complex, free form entry of technical equations.
- Intelligent, automated evaluation of student responses.
- Create your own content quickly and easily, or use hundreds of sample questions.
- Offers tests anywhere, anytime.
- Students may collaborate together, but not copy when random algorithmic generation of questions creates different questions from the same template.
- Does the marking for you, and makes it simple to analyse student results.
- Lets you know exactly the strengths and weaknesses of your students so you can plan your teaching curriculum accordingly.
- Lets students assume accountability for their maths course readiness as student performance is automatically assessed, providing immediate feedback while the questions are still fresh in their minds.

Backed by the power of Maple, Maple T.A. is the only system designed for teaching maths, science or engineering.

"The very high variability possible within well written questions means the same bank of questions can be used without risk for practice, assessment and revision. The increased complexity of questions that may be asked has advanced the range of situations where CAA [Computer-Aided Assessment] may be used."

Steve Gourdie - IT Manager
Department of Mathematics & Statistics
University of Canterbury

Request your Free Maple T.A. Trial Now!

1. Call 0800 477 776 and quote lead 2529
2. E-mail 2529@hrs.co.nz
3. Visit www.hrs.co.nz/2529.aspx

Maple T.A.™
Online Testing and Assessment … Powered by Maple™

HRS
Hoare Research Software Ltd