

Newsletter

Mathematics & Statistics

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NZ MATHEMATICS & STATISTICS POSTGRADUATE CONFERENCE - NOVEMBER 2007



Around 40 mathematics and statistics students from most of New Zealand's universities travelled to Queenstown for this two-day meeting in November. The talks were diverse, ranging from abstract algebra to Bayesian statistics, from phylogenetics to physiology. The quality of presentations was high, with all students taking up the challenge of explaining their work to a diverse audience. **Hannes Diener's** presentation entitled *The Dark Side of Constructive Reverse Mathematics* was chosen for the NZIMA Best Presentation Award, while **Michael Langton's** presentation on *Surface Reconstruction with Piecewise Radial Basis Functions* earned him the People's Choice Award sponsored by Hoare Research Software (HRS). The questions and discussions after the talks made it clear that students had managed to capture the interest of the audience and had gained an appreciation of each other's work. Thanks go to **Scott Graybill** for his organisation of this conference, with funding provided by our own Mathematics & Statistics Department, NZIMA and HRS. Thanks also to Dion O'Neale for his report.

HEAD OF DEPARTMENT'S CHRISTMAS MESSAGE

This year has seen many highlights in the areas of both teaching and research and ended with a very successful Departmental Planning Day on 17 December. A good and very productive time was had by all at Clearwater Resort, where we were very well catered for. The next phase of the planning process will involve Liz Henderson in the interviewing of our key stakeholders. In the meantime, I wish you all the best for the festive season and I hope you will take a break from work some time over the next couple of months. Next year with its new challenges will be upon us soon enough.

Merry Christmas and a Happy New Year!

- David Wall

PROMOTIONS

Jennifer Brown & Charles Semple have been promoted to the rank of Associate Professor.

Douglas Bridges has been promoted within his professorial rank.

Alex James & Ben Martin have been awarded double increments.

Irene David's position of Senior Tutor has been upgraded from fixed term to continuing.

10th ANNUAL MOLECULAR ECOLOGY CONFERENCE



Raaz Sainudiin recently took 3 students – recent UC graduate and now Auckland PhD student **Alethea Rea**, **Miriam Hodge** (PGDipSci), and **Bry Ashman** (undergraduate research assistant) to the above conference in Kaikoura. He reports that the talks were stimulating and activities included field trips to see various tidal flora and fauna as well as a guided tour of the behavioural ecology and parasitology of the local fur-seal colonies. Raaz also gave a talk at the conference entitled *On the definition of genetic units in conservation and biosecurity*.

GEOSPATIAL RESEARCH CENTRE GRANT

Congratulations to **Jennifer Brown**, who has been awarded a Geospatial Research Centre grant to investigate the feasibility of using heat-seeking equipment on remote controlled planes to locate pest animals.

AITKEN PRIZE WINNER

Congratulations also go to PhD student, **Peter Humphries**, who was awarded the Aitken Prize for the best student paper at the AMS-NZMS meeting in Wellington from 12-14 December 2007. His paper was entitled *A Basis Exchange Property for Matroids* and was based on his research collaboration with Jim Geelen (University of Waterloo). Peter is the third Canterbury University student to win this award, and it is interesting to note that the 1998 winner, a student from Victoria University, was none other than Peter's current supervisor, **Charles Semple**.

<u>Visitor</u>	<u>Organization</u>	<u>Host</u>	<u>From</u>	<u>To</u>	<u>Room</u>	<u>Extn</u>
Tobias Thierer	University of Auckland	M Steel	21/5/07	21/12/07	616	8876
Prof. Willy Hereman	Colorado School of Mines, USA	M Hickman	1/7/07	20/12/07	605	8028
Prof Niklas Wellander	Swedish Defence Research Agency	D Wall	19/11/07	11/12/07	607	8875
Dr Oleg Davydov	University of Strathclyde, Scotland	R Beatson	24/11/07	8/12/07	710	7694
Alethea Rea	University of Auckland	M Steel	3/12/07	4/1/08	620	7431
Prof Bryan Manly	West Inc. USA	J Brown	12/12/07	2/1/08	607	8875
Dr Tim Robinson	University of Wyoming, USA	J Brown	13/12/07	11/7/08	605	8028

LITTLE MATHEMATICIANS CELEBRATING HALLOWEEN



Michelle Crowell takes control



Uncle Marco shows how it's done



Alison Murray and friend

PAPER SUBMITTED

PL Wilson, H Huang & S Takagi: *The lipid bilayer at the mesoscale: a physical continuum model* (submitted to *Mathematical Medicine and Biology*)

PAPER ACCEPTED

D S Bridges & L S Vita: *Proximal Connectedness* (*Fund. Informaticae*)

B Thatte & M Steel: *Reconstructing pedigrees: a stochastic perspective* (*Journal of Theoretical Biology*)

B Faller, F Pardi & M Steel: *Distribution of Phylogenetic Diversity under Random Extinction* (*Journal of Theoretical Biology*)

F Matsen, E Mossel & M Steel: *Mixed-up trees: the structure phylogenetic mixtures*

PAPER PRESENTED

Meyer J, Lenz K, Wilson P L, Wilbert J, Guckenberger M, Richter A, Baier K: *Modelling Tumour Trajectories as a Function of Respiratory Motion* (presented at the Engineering & Physical Sciences in Medicine and the Australian Biomedical Engineering Conference (EPSM-ABEC), Perth, 14-18 October 2007)

PAPER PUBLISHED

R Loewen & G F Steinke: *Actions of $R.SL(2,R)$ on Laguerre planes related to the Moulton planes* (*Journal of Lie Theory*, vol 17, 685-708, 2007)

B Polster & G F Steinke: *Virtual points and separating sets in spherical circle planes* (*Beitr. Algebra Geometry*, vol 48, 443-467, 2007)

Gresnigt NG, Renaud PF, & Butler PH: *The stabilized Poincare-Heisenberg algebra: a Clifford algebra viewpoint* (*Int. J. Mod. Physics. D.*, v16 (9), 2007, 1519-1529)

ARTICLE PUBLISHED

Wilson P L: *Frugal Nature: Euler and the Calculus of Variations* (*Plus Magazine*, issue 44, September 2007 (online at <http://plus.maths.org/issue44/features/wilson/index.html>))

SUCCESS FOR MATH199 (AIMS) STUDENTS

Congratulations to **Catherine Cumpstone** and **Matt McDonald**, two of our MATH199 (AIMS) students from Nayland College who have jointly won the 2007 Scholars in Science competition run by the College of Science. They will get a fees waiver for three years on condition that they study a degree within any of the College's departments.

The competition in its various stages took the form of written tests, a verbal quiz before an invited audience and, for the 4 finalists, a series of practical tasks followed by further questions on general scientific knowledge.

Congratulations also to **Tristan Read** and **Sam Hamilton**, two local MATH199 students from Christ's College, who, along with one other, have been awarded University of Canterbury scholarships for winning a competition run by the University's Electric Power Engineering Centre.

The competition was designed to encourage students to focus on alternative energy sources and their winning entry involved an idea to harness wind and solar power to provide energy for Antarctic research stations. The students each receive a scholarship worth \$4,000 over two years to study engineering, while their school received a \$2,000 prize.

CONFERENCES & VISITS

David Wall: talk on *Functional equations with application in biology* at the Workshop on Recent Advances in Functional and Delay Differential Equations, Canada, 1-5 November 2007

Douglas Bridges: research visit with Dr Simona Vita, Wellington, 7-9 November 2007

Gunter Steinke: talk entitled *Trades in transversal designs $TD_1(3,4,4)$ and geometric substitution* at the 32nd Australasian Conference on Combinatorial Mathematics & Combinatorial Computing, Dunedin, 3-7 December 2007

Rua Murray: talk entitled *Maximum entropy methods for the computation of invariant measures* at an AMSI Mini-Symposium on Entropy Methods in Dynamical Systems, Melbourne, 4-5 December 2007

Raaz Sainudiin: talk entitled *On the definition of genetic units in conservation and biosecurity* at the 10th Annual NZ Molecular Ecology Conference, Kaikoura, 7-9 December 2007

Mark Hickman: attending the NZMS-AMS Joint Meeting, Wellington, 12-15 December 2007

Bill Taylor: attending the NZMS-AMS Joint Meeting, Wellington, 12-15 December 2007

Clemency Montelle: talk entitled *The Net of Numbers: Combinatorics in Ancient India* at the NZMS-AMS Joint Meeting, Wellington 12-15 December 2007

Carl Scarrott: funding for Alethea Rea to attend MOOSIM07, Lincoln University, December 2007

Alex James: talk at the NZ Workshop on Biomedical Problems, Dunedin, 17-19 December 2007

Mike Plank: talk at the NZ Workshop on Biomedical Problems, Dunedin, 17-19 December 2007

Peter Humphries: to attend the Isaac Newton Institute Workshop, December, UK

Clemency Montelle: talk entitled *Hypocycles of Alexandria and Arithmetical Sequences* at a Joint Math Meeting in San Diego, 6-9 January 2008.

Mark Hickman: talk (tba) at the NZ Mathematics Research Institute Summer workshop on Conformal Geometry and Geometric Approaches to PDE, Nelson, 6-12 January 2008

Mike Plank: talk (tba) at the ANZIAM 2008 Conference, Katoomba, NSW, 3-7 February 2008

Marina Zahari: to attend a Bio Statistics Workshop at Auckland University, 21-22 February 2008

Phil Wilson: talk (tba) at the European Consortium for Mathematics in Industry conference, London, July 2008.

RETIREMENT

Neil Watson is retiring with effect from February 2008, but he will be continuing on a part-time contract basis for the next 3 years, which, he says, will give him more time for his hobbies...such as mathematics!

Merry Christmas & A Happy New Year!

