



### 2010 GRADUATION AFTERNOON TEA AND PRIZEGIVING

An afternoon tea for graduates and department prize winners was held on Tuesday 14 December. We were delighted that Peter Wily was able to attend, to present the first Helen Wily Prize in memory of his late wife. Congratulations to all our prize-winners, including Katy Bergstrom, co-winner of the W B Wilson Prize, who was unable to attend.



Nicholas Brettell (Cook Prize co-winner)



James Hadfield (Cook Prize co-winner)



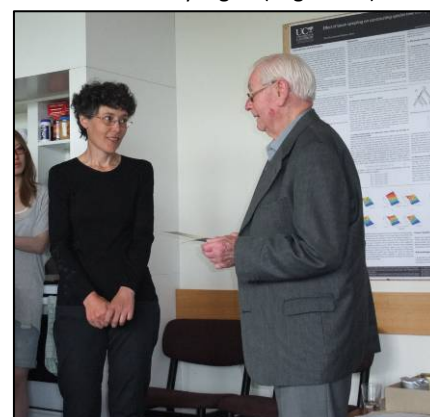
Thomas Heyang Li (Page Prize)



Hun Lee (W B Wilson Prize co-winner)



James Bonifacio (Gordon Petersen Prize)



Jennifer Harlow (Helen Wily Prize)



Simon Todd (Peter Bryant Prize 200-level)



Joshua Chen (Peter Bryant Prize 100-level)



The gathering through

## CONGRATULATIONS

Congratulations to the following staff who were successful in the latest promotion round:

- **Jennifer Brown** – promoted to Professor
- **Charles Semple** – promoted to Professor
- **Gunter Steinke** – promoted to Associate Professor
- **Chris Price** – promoted to Senior Lecturer above the bar
- **Phil Wilson** – promoted to Senior Lecturer

### NZ MATHEMATICS SOCIETY RESEARCH AWARD

Congratulations to **Charles Semple**, who has been awarded this year's Research Award by the NZ Mathematical Society. This award was instituted in 1990 "to foster mathematical research in New Zealand and to recognise excellence in research carried out by New Zealand mathematicians." The citation for Charles' award reads as follows: *for his landmark contributions to combinatorics and, in particular, matroid theory, as well as leading work in phylogenetics and computational biology.*

- Mike Steel



Congratulations to **James Degnan**, who is one of two recipients of this year's College of Engineering Early Career Research Awards. – Charles Semple

Congratulations to **Rachael Tappenden**, who was awarded the NZ Mathematical Society's Aitken Prize at the recent Colloquium for her talk *Extensions of Compressed Sensing*. The Aitken Prize is awarded annually for the best student talk at the NZMS Colloquium. This is the fourth time that a PhD student from our department has collected this award.

Congratulations to **Anna MacDonald** who won the prize for the best Statistics presentation at last month's postgraduate conference.

Congratulations also to the following students who graduated this month:

**PhD:** - Scott Graybill (Bioengineering) and Xin Zhao (Statistics)

**BSc(Hons):** Ahmad Fazil (Statistics & Mathematics); Nicholas Brettell (Mathematics), William Frost (Mathematical Physics), Nurul Idris (Mathematics), Clare O'Connell (Mathematics & Philosophy)

**BSc:** Norazeh Abd Shukor (Mathematics & Statistics), Nuradilla Azhari (Mathematics & Statistics), Rowen de Vries (Physics & Mathematics), William Frost (Physics & Mathematics), Adam Gray (Mathematics & Computer Science), Yang Hu (Statistics), Alastair Jamieson-Lane (Mathematics), Jeevananthan Kasinathan Panadam (Physics & Mathematics), Daniel Laws (Statistics), Wan Zanariah Binti Md Jahaya (Mathematics & Statistics), Mohamad Ainan Bin Md Annual (Mathematics & Statistics), Nurul Afiqah Binti Md Najib (Physics & Mathematics), Fiona Morrison (Statistics), Shane Neiman (Statistics), Jasmine Robinson (Chemistry & Mathematics), Luke Stevens (Mathematics), Jesse Unger (Mathematics & Economics), Paul van Berkel (Mathematics & Physics), Uthpala Vattala (Statistics), Matthew Ward (Mathematics & Psychology), and Miaofei Zhao (Statistics & Economics). **BA:** Ann Lah (Mathematics & Chinese)



Scott Graybill, PhD (Bioengineering)



Xin Zhao, PhD (Statistics)



Ahmad Fazril, BSc (Hons) in Statistics

I was delighted to receive an email from a mature student praising **Irene David** for the quality of her teaching and her approachability. He went on to describe Irene and **John Hannah** as the two most outstanding lecturers he has encountered in any department at UC. Well done, Irene and John!

- Jennifer Brown



#### ROYAL SOCIETY AWARDS DINNER

Jennifer Brown, Anna MacDonald and Rachael Tappenden were guests of the NZIMA (New Zealand Institute of Mathematics and its Applications) at the Royal Society Awards dinner on 10 November. Also at their table was Len Cook, former head of Statistics NZ and now Chair of the new NZIMA governing board. Mike Steel and Charles Semple were also at the dinner at the table organised by the Allan Wilson Centre for Molecular Ecology and Evolution.

#### UNIVERSITY TECH JUMPSTART COMPETITION

Earlier this year the university ran the inaugural Tech Jumpstart competition. Academics submitted projects with commercial potential; the three winning projects were awarded \$20,000 each and will be given help from Research and Innovation to commercialise them. I was the College of Engineering representative on the judging panel and it was fascinating to see the wide range of ideas: from colour models for computer graphics to tidal power generation, to probiotics for fish food.

- Ben Martin



#### INDIAN SCULPTURE

Raazesh Sainudiin in India with the team of sculptors working on part of a sculpture he has designed to honour Pingala, an Indian Mathematician from around 2,400 years ago. Raaz says that this piece has the origins of binary-to-integer algorithmic bijection, Binomial Coefficients and Fibonacci numbers as written by Pingala in Chandha Stastra. The final sculpture will be a water fountain. Water will flow through the grooves and make a binomial water fountain as it departs the holes at the base, similar to the Quincunx with nails and bells that was built in our department.

#### **PAPERS SUBMITTED**

**Moradi, M., Salehi, M., Brown, J. & Karimi, N.:** *Regression Estimator under Inverse Sampling to Estimate Arsenic Contamination* (submitted to Environmetrics).

**Panahi, B., Pavardeh, A., Salehi, M. & Brown, J.:** *Asymptotic Properties of Estimators for Adaptive Two-stage Sequential Sampling with Multiple Selection Criteria* (submitted to Journal of Statistical Computation and Simulation).

**Sainudiin, R. & York, T.:** *An auto-validating, trans-dimensional, universal rejection sampler for locally Lipschitz arithmetical expressions.*

## PAPERS ACCEPTED

**Sainudiin, R., Thornton K., Harlow, J., Booth, J., Stillman, M., Yoshida, R., Griffiths, R., McVean, G. and Donnelly, P.:** *Experiments with the Site Frequency Spectrum* (Bulletin of Mathematical Biology, Algebraic Biology Special Edition, pp. 1-39, 2010).

## PAPERS PUBLISHED

**Bridges, D.S. & Hendtlass, M.:** *Continuous Isomorphisms from  $R$  onto a Complete Abelian Group* (J. Symbolic Logic 75(3), 930-944)

**Bridges, D.S. & Diener, H.:** *The Anti-Specker Property, Positivity, and Total Boundedness* (Math. Logic Quarterly 56(4), 434-441)

**Bridges, D.S. & Loeb, I.:** *Glueing Continuous Functions Constructively* (Archive for Math. Logic 49(5), 603-616).

**Bridges, D.S.:** *Inheriting the anti-Specker Property* (Documenta Mathematica 15, 973-980, 2010)  
<http://www.math.uiuc.edu/documenta/vol-15/30.pdf>

## CONFERENCES & VISITS

**Richard Brown:** gave a talk entitled *A Direct Method for Correcting Errors in Orthogonal Matrices using Generalised Cayley Transforms* at the Computational Techniques and Applications Conference (CTAC2010) in Sydney from 29 November – 1 December 2010.

**Qui Bui:** undertaking a research visit to Prof. Lixin Yan at Zhongshan University, Guangzhou, China, from 1 – 22 December 2010.

**Jeanette McLeod:** made a research visit to Brendan McKay at the Australian National University (ANU) Canberra from 6 – 11 December 2010.

**Michael Plank:** to attend the Australian & New Zealand Industrial and Applied Mathematics Conference (ANZIAM 2011) in Adelaide from 30 January 0 3 February 2011. Talk to be advised.

**Raazesh Sainudiin:** gave a talk entitled *Experiments with the site frequency spectrum* at the Bangalore Probability Seminar, Indian Statistical Institute, Bangalore, India on 15 December 2010.

**Raazesh Sainudiin:** invited to the Bordeaux Centre of INRIA (Institut National de Recherche en Informatique et en Automatique) for a research visit to work on Set-valued Monte Carlo methods and to the Centre de Mathematiques Appliquees, Ecole Polytechnique, Paris, for research on Markov Lumping of Spatial Coalescent Processes during January and February 2011. All travel and subsistence costs to be met by his French research associates.

**Charles Semple:** gave a talk entitled *Constructing a 3-tree for a 3-connected Matroid* at a meeting on Matroids and Computation at Victoria University, 29 November – 3 December 2010.

**Charles Semple:** gave a talk entitled *Submodular Functions and Optimizing Biodiversity* at the NZMS Colloquium in Dunedin from 6 – 10 December 2010.

## WELCOME TO OUR DEPARTMENT VISITORS

Visitor	Organization	Host	From	To	Room	Extn
Richard Law	University of York	M Plank	29/9/10	7/1/11	710	7694
Sebastian Boecker	Friedrich-Schiller University	M Steel	7/10/10	29/3/11	616	8876
Maria Maietti	Padova University	D Bridges	15/11/10	15/12/10	605	8028
Francesco Ciraulo	Palermo University	D Bridges	15/11/10	15/12/10	605	8028
Viggo Stoltenberg-Hansen	Uppsala University	D Bridges	14/11/10	11/12/10	607	8875
Erik Palmgren	Uppsala University	D Bridges	16/11/10	11/12/10	607	8875
Giovanni Sambin	Padova University	D Bridges	17/11/10	20/12/10	605	8028
Felipe Voloch	University of Austin Texas	B Martin	1/12/10	1/5/11	TBA	
Laszlo Szekely	University of Sth Carolina	M Steel	8/12/10	15/1/11	620	7431
Eva Czabarka	University of Sth Carolina	M Steel	8/12/10	15/1/11	620	7431
Vincent Moulton	University of East Anglia	C Semple	18/12/10	28/2/11	607	8875
Katharina Huber	University of East Anglia	C Semple	18/12/10	28/2/11	607	8875

## DOUGLAS BRIDGES' VISITORS

You may have noticed an unusually large influx of European visitors in the Department recently. Six of those are here under the EU Marie Curie IRSES award for the project *Constructive mathematics: Proof and Computation*, which was granted to a consortium of mathematicians and logicians from Munich, Padova, Uppsala, Kanazawa, and Canterbury.

My six visitors are: Professors Erik Palmgren and Viggo Stoltenberg-Hansen, and Anton Hedin (whom many of us know already), from the University of Uppsala, Sweden; Professor Giovanni Sambin and Dr Milly Maietti, from the University of Padova, Italy; and Dr Francesco Ciraulo, from the University of Palermo, Sicily.

While they are here, we will be working together on aspects of constructive topology and foundations of mathematics. There will also be a workshop/symposium, entitled *Topology and Analysis: Proof and Computation*, held on several days in the week beginning 30 November. During that week, I and each of the visitors will present talks, aimed mostly at mathematicians and logicians with little or no prior knowledge of our research. The talks will cover topics ranging from constructive nonstandard analysis to formal (pointfree) topology. All interested are welcome to join us.

- Douglas Bridges

## POSTGRADUATE REVIEW - 2010

This year has been another good year for the postgraduates in the Mathematics and Statistics Department with Joe Zhu organising a successful postgraduate seminar series. The seminars were held on Wednesday afternoons during term time and covered topics from Matrix Polynomials to New Zealand native snails! Several staff from the department also gave seminars including Mark Hickman, Clemency Montelle and Alex James who talked about how to make figures in latex, how to write mathematics and how to apply for academic positions. Afternoon teas were generously provided by the department.

Shannon Ezzat, Anna MacDonald and Rachael Tappenden organised the New Zealand Mathematics and Statistics Postgraduate conference which was held at the University field station in Westport from 22-25 November. There were 35 participants from the New Zealand universities with each participant giving a 20 minute presentation on their research. We had three plenary speakers: David Wall (University of Canterbury), Gaven Martin (Massey University at Albany), and Esther Meenken (Plant and Food Research). Our own Anna MacDonald won the prize for the best Statistics presentation.

The postgrads have attended many international conferences this year in exotic locations including the International Society of Bayesian Analysis, Spain, COMPSTAT in France, IWSM in Glasgow, SIAM Summer School on Numerical Linear Algebra in Italy, CTAC in Sydney, International Conference on Mathematics Evolution and Development in Shanghai, the

Postgraduate Group Theory conference in St Andrews and the Automorphism Groups of Topological Structures Conference in Israel. They also attended domestic conferences including the NZ Statistics Conference and Biodiversity and Beyond in Dunedin. A number of postgraduates also attended the New Zealand Mathematical Society Colloquium held at the University of Otago from 6-9 December. Rachael Tappenden won the Aitken Prize for the best student presentation. Several were visitors at various universities including the University of Edinburgh and the University of Southampton.

Congratulations go out to our recent doctoral graduates - Scott Graybill, Xin Zhao and Beata Faller. Monica Chen and James Wang also completed their Masters Degrees. Miriam Hodge has swapped green landscapes for high rise building and copious amounts of sand in Abu Dhabi. She is taking statistics to a new level helping start up a government statistics department.

We have had several new student arrivals this year with Lisa Henley, Peter Jaksons, Agate Ponder Sutton and Joe Zhu starting their PhD studies and Sabaa Saharan starting her masters. No doubt there will be a few more changes to the department next year with Dan, Wen, Gloria, Liene, Marina, Miriam, Anna, Rachael and Shannon all due to submit their theses!

On behalf of all the postgrads we would like to thank the department for its support over the past year. We wish everyone a very happy and safe Christmas and the very best for the coming year!

- Rachael Tappenden and Anna MacDonald

### STAFF CHRISTMAS BBQ

A good time was had by all at the annual staff BBQ held on 15 December. The event was professionally catered this year, leaving all staff free to enjoy the occasion. To add to the occasion, the Erskine Singers, conducted by Jan Evans-Freeman, performed a selection of traditional and contemporary carols.





### HoD's MESSAGE

This will be the last newsletter for 2010 and it is timely to reflect on the year. What a year it has been, with two major events happening that have affected us all in some way – the earthquake and, more recently, the West Coast mine disaster. The earthquake was a very difficult time, but it was also a time I will fondly recall when we worked so well together in the clean-up. The photo of morning tea on clean-up day (September newsletter) says it all – a room of smiling faces and a great team.

There have been some outstanding successes this year: new Marsdens (congratulations to Ben Martin and Clemency Montelle); a University Teaching Award for Rua Murray; new opportunities, with links to AMI and the Statistics NZ partnership agreement with UC; and new challenges, with the MATH300 review and planning for the new MATH200 courses for 2011. Another milestone this year was the setting up of MATHSOC, for which thanks go to Thomas Li and Robin Candy for their initiative and sterling work in this regard.

We have had staff changes with Neil Watson and Ian Coope retiring, and new staff joining us – Jeanette McLeod, Maarten McKubre-Jordens, Xin Zhao and Blair Robertson.

Thank you all for your hard work this year. Enjoy a summer holiday and time with your family and friends.

*- Jennifer Brown*

