

Newsletter

Mathematics & Statistics

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THIS ISSUE

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CONFERENCES - DOOM 07



Prof. Arndt von Haeseler (Vienna) joins Stefan Grunewald and Oliver Will for some well-deserved refreshment at DOOM 07



Participants at the DOOM 07 meeting, in front of Mt Ruapehu

The 11th annual New Zealand phylogenetics meeting was held this month at Tongariro National Park in the Skotel Hotel, beside The Chateau. The meeting (DOOM 07, after Mt Doom, aka Mt Ngaruhoe) was booked out more than 6 months ago, once the limit of 55 participants had registered. The participants, from 10 countries, included a group of 12 from our department – 2 staff, 2 postdocs, 3 graduate students, 3 Summer students and 2 visitors – and all gave talks. Congratulations to Tanja Gernhard (Summer student from Munich), who won one of the 2 student prizes for best talk.

The annual phylogenetics meeting brings leading international researchers in evolutionary biology together with mathematicians and students. This year's speakers included Prof. Bill Martin, who is presenting a seminar on his recent work with Mike Russell on the origin of life, in the Chemistry Department on 26 February.

The next annual phylogenetics meeting will be held in Whitianga in February 2008, and in either Akaroa or Kaikoura in 2009. In June this year, approximately 1,000 people are expected to come to Christchurch for the annual worldwide Evolution meeting, never before held outside of North America.

Mike Steel

CONFERENCES (contin.)

Alex James, Mike Plank, and Scott Graybill attended the ANZIAM 2007 Conference in Freemantle, Western Australia from 28 January to 1 February 2007. Alex gave a talk on "The Laziest Insect in the World". Mike's talk was entitled "Superspreading". And PhD student Scott gave a talk on "Mathematically Modelling a Nephron".

Kyoko Fukuda is presenting a paper at the IEEE Symposium Series on Computational Intelligence 2007 in Hawaii from 1-5 April 2007.

The **NZSA 2007** conference will be hosted by this university on Wednesday 4 July in the MSCS Building. Further information will be available from the conference website or, failing that, at nzsa2007@gmail.com.

A tandem conference in honour of **Prof. John Deeley**, former Chair of Statistics at Canterbury, is to be held on 5-6 July. This promises to be a well-attended and lively event, with many of John's students, colleagues and friends from around the world expressing a strong desire to join in honouring a much-loved member of the international statistics community. The conference organiser, Mik Black of Otago University, can be contacted at mik.black@stonebow.otago.ac.nz.

CONGRATULATIONS!

David Wall has followed his recent promotion to the rank of Professor with election as a foreign member of The Royal Society of Arts and Sciences in Göteborg, Sweden.

Charles Semple has been promoted to the rank of Senior Lecturer above the bar.

Postdoctoral Fellow **Erick Matsen** has been offered a prestigious 3-year Miller Fellowship at the University of California Berkeley, commencing August 2007.

Congratulations to Ben and Rachel on the safe arrival of their first child.

Daniel Michael MARTIN was born at the end of January and has already attended his first maths seminar!



2006 Departmental Prize Winners:

Cook Memorial Prize:	James Roscoe
Page Memorial Prize:	Timothy Candy
William Brent Wilson Memorial Prize:	Matthew Hendtlass
Gordon Petersen Memorial Prize:	Ashley Lightfoot
Peter Bryant Memorial Prize:	Jevon Carding (200 level) and Oliver Clark (100 level)
Statistics NZ Prize:	Anna MacDonald

POSTGRADUATE STUDENTS 2007

PhD:

Ronald Begg, Hannes Diener, Mareike Fischer, Kyoko Fukuda, Zhaojing (Jean) Gong, Scott Graybill, Klaas Hartmann, Peter Humphries, In Kang, Michael Langton, Daniel Lond, Izzy Weeraprajak, Meghan Williams, Marina Zahari, and Xin Zhao.

Masters:

Jason Bentley, Michael Hayward, and Andrew Richens.

WELCOME TO OUR DEPARTMENTAL VISITORS

Visitor	Organization	Host	From	To	Room	Extn
Ms Simone Linz	Dusseldorf University, Germany	C Semple	29/9/06	31/8/07	724	7691
Dr Magnus Bordewich	Durham University, UK	C Semple	8/1/07	30/3/07	724	7691
Dr Balchandra Thatte	Massey University	M Steel	8/1/07	31/3/07	720	8337
Prof S L Lee	Nat. University of Singapore	R Beatson	10/1/07	10/6/07	501	8376
Ms Tanya Gernhard	Munich University, Germany	M Steel	19/1/07	10/4/07	620	7431
Mr Dennis Wong	New Brunswick University, Canada	M Steel	1/2/07	5/4/07	710	7694
Ms Tracy Heath	University of Texas, Austin, USA	M Steel	1/2/07	15/3/07	710	7694
Prof G Kristensson	Lund University Sweden	D Wall	7/2/07	14/4/07	607	8875
Prof Richard Law	York University, UK	D Wall	10/2/07	21/4/07	607	8875
Prof Marcus du Sautoy	Oxford University, UK	B Martin	12/2/07	18/2/07	605	8028
Dr Stefan Grünewald	Inst. for Comp. Biology, China	M Steel	16/2/07	7/3/07	616	8876
Dr Catherine McCartin	Massey University, P. Nth	C Semple	19/2/07	23/2/07	703	8878
Prof H van Maldeghem	Ghent University, Belgium	G Steinke	20/2/07	14/7/07	605	8028

Erskine Fellows

Prof. Gerhard Kristensson is an Applied Mathematician with specialist knowledge in electromagnetic wave propagation theory, inverse scattering, homogenization theory, partial differential equations and antenna theory. He will be working with David Wall and Peter Renaud of this department, and Prof. Phil Bones of Electrical Engineering. Prof. Kristensson will be engaged in a variety of teaching-related activities, interacting with 3 PhD students, and giving seminars on homogenization theory.

Prof. Richard Law has worked extensively in mathematical modelling of ecological systems. His work covers spatial dynamics in ecology, dynamics of ecological and plant communities, food web structure, adaptival dynamical systems, and management of biological resources. He will be working with David Wall, Alex James, Jennifer Brown, and Mike Plank in this department, and Hazel Chapman in Biological Sciences. Professor Law will deliver a Royal Society lecture during his time at Canterbury and a seminar in the Dean of Science general lecture series.

Prof. Hendrik van Maldeghem is a senior professor who specialises in generalized polygons, buildings, combinatorics, and algebra. Prof. van Maldeghem will be working with Gunter Steinke and undertaking lectures on rings, integral domains, ideals and factor rings, and ring homomorphisms.

Prof. Marcus du Sautoy of Oxford University visited Canterbury for a week this month. His trip to New Zealand was supported by a Maclaurin Fellowship from NZIMA (the NZ Institute of Mathematics and its Applications) which Eamonn O'Brien (University of Auckland) and Ben Martin applied for last year.

As well as being a distinguished mathematician, Marcus has an impressive record as a populariser and communicator of mathematics. He has appeared many times on radio and television in the UK and has written a book on mathematics for the lay reader entitled *The Music of the Primes*. Marcus holds an EPSRC (Engineering and Physical Sciences Research Council) Senior Media Fellowship in the UK. Later this year, he will make a four-part BBC documentary on the history of mathematics.

Marcus gave a public lecture on *The Music of the Primes* as part of the Faculty of Science Prestige Lecture series. The talk dealt with serious mathematics but also covered some lighter topics, such as the question of why David Beckham wears the number 23 shirt. The overall theme of the lecture was that, although prime numbers are very mysterious and their behaviour seems random, if you look at them in the right way some beautiful patterns appear.

Prof Seng Luan Lee has been visiting Rick Beatson and Qui Bui since mid-January. Prof. Lee is well-known internationally for his work on splines and wavelets and until recently was Head of the Mathematics Department at the National University of Singapore. He is also the founding director of the Centre for Wavelets Approximation and Information Processing at the NUS. Prof. Lee gave a seminar on 15 February entitled *Tight Frames and Transformations on Triangular Meshes in 3-D Space*.

<p>Prof. Christian Robert reports from France that his book <i>Bayesian Core</i>, from which he was teaching during his visit to this department last July, has now been published, (Springer, Feb 2007.)</p>
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PAPERS SUBMITTED

N Gruenheit, P J Lockhart, M Steel & W Martin: *Testing covarion structure in chloroplast protein sequence data* (submitted to Molecular Biology and Evolution).

M Steel, A Mimoto, & A O Mooers: *Quantifying a taxon's expected contribution to future phylogenetic diversity* (submitted to American Naturalist).

PAPER PRESENTED

Lee D S, Roscoe J, and Russell G: *Developing hidden Markov models for aiding the assessment of preterm babies' health* (International Conference on Biomedical and Pharmaceutical Engineering (ICBPE) Singapore, 11-14 December 2006).

PAPERS ACCEPTED

D S Bridges: *Constructing local optima on a compact interval* (Archiv fuer Math. Logik)

Douglas Bridges & Hannes Diener: *The pseudocompactness of $[0, 1]$ is equivalent to the uniform continuity theorem* (Journal of Symbolic Logic)

Lin J, Lee D S, Chase J G, Hann C E, Lotz T, and Wong X W: *Stochastic modelling of insulin sensitivity variability in critical care* (Biomedical Signal Processing & Control, 2007)

H. Q Bui & R S Laugesen: *Sobolev spaces and approximation by affine spanning systems* (Math. Annalen.)

PAPERS IN PRESS

M Steel & E Matsen: *The Bayesian 'star paradox' persists for long finite sequences* (Molecular Biology and Evolution)

Moulton V, Semple C, & Steel M: *Optimizing phylogenetic diversity under constraints* (Journal of Theoretical Biology).

PAPERS PUBLISHED

Rudge A D, Chase J G, Shaw G M, Lee D S, and Hann C E: *Parameter identification and sedative sensitivity analysis of an agitation/sedation model* (Computer Methods and Programs in Biomedicine, Vol 83 (3), pp 211-221, ISSN: 0169-2607)

D S Bridges, R S Havea & P M Schuster: *Ideals in constructive Banach algebra theory* (J Complexity 22, 729-737, 2006)

D S Bridges & L S Vita: *Pre-apartness structures on spaces of functions* (J Complexity 22, 881-893, 2006)

Robinson D F: *Pythagorus meets Fibonacci* (New Zealand Mathematics Magazine Vol 43, No 2, 37-39. 2006)