

ANNUAL NZ PHYLOGENETICS MEETING - LEIGH 2011



LEIGH 2011

A former sawmill on a remote beach north of Auckland may seem an unlikely location for a week-long meeting of biologists and mathematicians. But the annual "NZ phylogenetics meeting" showcased a range of 'cutting edge' research (pun intended), with talks from three UC staff (James Degnan, Charles Semple and Mike Steel) as well as recent departmental visitors (Sebastian Boecker, Tanja Stadler, Vincent Moulton and Katharina Huber). PhD student Joe Zhu was also at the meeting. The meeting - the 16th in an annual series - was held from 6-11th February in Leigh in a converted sawmill that is now a comfortable lodge/cafe/brewery. Over fifty participants from seven countries attended, with just over half the participants from New Zealand. Talks ranged from the development of new methods for constructing phylogenetic trees and networks, to questions such as why rates of evolution over recent time periods appear faster than over longer ones (the so-called 'J-curve'), through to applications in epidemiology, phylogeography and conservation biology. The meeting was organised by David Bryant (Otago) and Stephane Guindon (Auckland). Next year's meeting will be in the South Island, at a similar time, and organised by Charles Semple and Mike Steel.

– Mike Steel

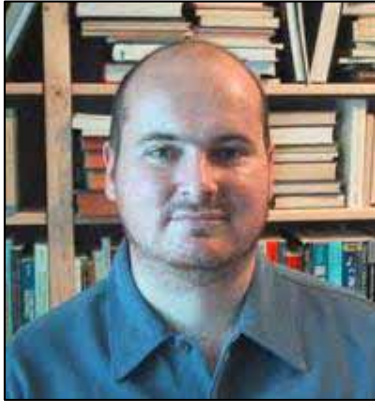
NOBEL PEACE PRIZE FOR STATISTICS?

From a Bosnian news website comes this story:

The Serbian government has nominated Miodrag Lovric from Serbia, Jasmin Komic from Bosnia and Ksenija Dumcic from Croatia for the Nobel Peace Prize. These three have conducted the largest international scientific project ever implemented in history in terms of the countries involved – the international Encyclopaedia of Statistical Sciences in three volumes. Whether this truly is the largest international scientific project is unclear, but Jennifer Brown is one of the contributors to the project.

– Jennifer Brown

WELCOME TO OUR DEPARTMENT VISITORS



Professor Warwick Tucker

ERSKINE FELLOW - PROFESSOR WARWICK TUCKER

Warwick Tucker, who will be lecturing in several statistics courses this semester, comes to us from Uppsala University, Sweden, where he is currently Research Leader in the Department of Mathematics. His field of special interest is computer-aided proofs in analysis and parameter estimation. In 2004, Warwick was awarded a European Mathematical Society prize, which is awarded in recognition of distinguished contributions in Mathematics by young researchers not older than 35 years. He is hosted by Raaz Sainudiin and will be based in Room 704 (extn 7427).

<u>Visitor</u>	<u>Organization</u>	<u>Host</u>	<u>From</u>	<u>To</u>	<u>Room</u>	<u>Extn</u>
Sebastian Boecker	Friedrich-Schiller University	M Steel	7/10/10	29/3/11	616	8876
Richard Laugesen	University of Illinois	Q Bui	12/1/11	30/6/11	605	8028
Felipe Voloch	University of Austin	B Martin	18/1/11	16/4/11	605	8028
Michael Floater	University of Oslo	R Beatson	24/1/11	12/2/11	600	6686
Teodor Burghilea	University of Nantes	M Moyers-G.	24/1/11	22/2/11	516	45558
Tanja Stadler	ETH Zurich	J Degnan	2/2/11	16/2/11	607	8875
Mary Myerscough	University of Sydney	A James	7/2/11	11/2/11	516	45558
Warwick Tucker (Erskine Fellow)	Uppsala University	R Sainudiin	20/2/11	8/4/11	607	8875



Congratulations to Phillipa Williams and Hilary Seddon, our newly appointed Senior Academic Tutors.

PROFESSOR FELIPE VOLOCH



Felipe Voloch is visiting the department until mid-April. His research area is number theory and applications to cryptography.

In the first term, he will give a series of four talks on elliptic curve cryptography aimed at academics, postgraduates and senior undergraduates.

Felipe did his PhD in Cambridge and is now a professor at the University of Texas at Austin (<http://www.ma.utexas.edu/uers/voloch/>).

His office here is Room 605 – feel free to go and say hello to him!

- Ben Martin

PAPERS SUBMITTED

Dress, A., Huber, K. and Steel, M: *'Lassoing' a Phylogenetic Tree I: Basic Properties, Shellings and Covers* (submitted to Journal of Mathematical Biology)

Lemke, D., Hume, P.E., Brown, J.A. and Tadesse, W.: *Distribution modelling of Japanese honeysuckle (*Lonicera japonica*) invasion in the Cumberland Plateau and Mountain Region, USA* (submitted to Forest Ecology and Management).

Mooers, A., Gascuel, O., Li H and Steel, M.: *Branch Lengths on Yule Trees and the Expected Loss of Phylogenetic Diversity* (submitted to Systematic Biology)

Sober, E. and Steel, M: *Screening-off (aka the Markov Property) and Causal Incompleteness – a No-Go Theorem* (submitted to Philosophy of Science)

Zhu, S., Degnan, J. and Steel M.: *Clades, Clans and Reciprocal Monophyly under Neutral Evolutionary Models* (submitted to Theoretical Population Biology)

PAPERS ACCEPTED

Sainudiin, R. and Penny, R.: (Government Research Contract Report) *Imputation Variance Estimation for Statistics New Zealand's Accommodation Occupancy Survey* (prepared for the New Zealand Ministry of Tourism, p. 1 – 26, 2010)

Sober, E. and Steel, M.: *Entropy Increase and Information Loss in Markov Models of Evolution* (Biology and Philosophy)

Smith, F.T. and Wilson, P.L.: *Fluid-body Interactions: clashing, skimming, bouncing* (Philosophical Transactions of the Royal Society A)

PAPERS PUBLISHED

Bridges, D.S. & Berger, J.: *A Constructive Study of Landau's Summability Theorem* (J. Universal Comp. Sci. 16(18), 2523 – 2534, 2010.)

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, 0092-8240, p. 1 – 44, 2010.)

Sainudiin, R. & Harlow, J.: *A C+ Library for Statistical Set Processing: Short Communication in Mathematical Software* (International Congress of Mathematicians, Hyderabad 19-27 August 2010, Section 21 p.670. ed. Rajendra Bhatia, Hindustan Book Agency, India, 2010.)

Steel, M.: *Can we avoid SIN in the House of 'No Common Mechanism'?* (Systematic Biology 60(1): 96-109, 2011)

MEMORIES OF SUMMER!



Koto Wilson (son of Phil) and cousin Harrison Dalby riding the waves at Mt Maunganui

FERMI TESLA GPU GRANTED

Igor Rychkov advises that Rick Beatson and himself have been granted a top of the line Fermi Tesla GPU from the NVIDIA Academic Partnership Program to develop massively parallel RBF implementations.

CONFERENCES & VISITS



Douglas Bridges, Matt Hendtlass and Thomas Steinke in Cape Town for CCA 2011

Qui Bui: invited speaker at the International Conference on Harmonic Analysis and Applications at Macquarie University from 7 – 11 February 2011. His talk was entitled *Besov Spaces on Nondoubling Quasimetric Spaces*.

James Degnan: attended the Annual New Zealand Phylogenetics Meeting in Leigh from 6 – 11 February 2011.

Maarten McKubre-Jordens: attended the Mathematics and Statistics in Industry Study Group (MISG 2011), RMIT University in Melbourne 6 -11 February. He also visited Dr Zach Weber at the University of Melbourne, where he was furthering work in the paraconsistent foundations of Mathematics, working towards showing completeness of the real line using no consistency-reliant inferences, and developing further proof techniques for Mathematics in an inconsistency-tolerant logic. He also gave a 3-part workshop/seminar entitled *What Constructive Mathematicians Actually Do*.

Peter Renaud: gave two seminars to the Mathematics Department at the University of Caen, France, entitled *Use and Abuse of Clifford Algebras in Physics and Engineering*, 11 & 18 January.

Raaz Sainudiin: invited by Pierre Del Moral, INRIA Research Director of Advanced Learning Evolutionary Algorithms (ALEA) Research Group in Bordeaux and Amandine Veber, CNRS Researcher at Centre for Mathematics and its Applications (CMAP), Ecole Polytechnique, Paris, on a research visit to France from 29 January to 18 February 2011. Raaz was collaborating with the ALEA group on set-valued evolutionary algorithms and with Veber on statistical inference of spatial coalescent processes. He also gave a talk entitled “ABCDE – Approximate Bayesian Computation Done Exactly” at the workshop on Random Models in Ecology, Genetics and Evolution in Paris.

Joe Zhu: attended the Annual New Zealand Phylogenetics Meeting at Leigh from 6 – 11 February 2011.

NEWS FROM EPS LIBRARY

- 1) Book a place in Endnote for Scientists and Engineers <http://bit.ly/gKUM32>
- 2) The most prestigious journal based on acceptance rate <http://bit.ly/hkismU>
- 3) New titles in EPS Library <http://bit.ly/c47VIE>