June 2015 Newsletter
Mathematics and Statistics

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Professor David Wall Retires

This month another leading light in our School retires. David Wall has been a highly regarded lecturer and researcher during his 34 years at this university. He has also been influential in shaping the School, especially during his time as Head. David has had an excellent research career and many students have benefited from his teaching.

2015 UC Teaching Award

Congratulations to Michael Plank, who was presented with a 2015 University of Canterbury Teaching Award on 8 June. John Hannah read the citation in support of Mike's award.

Research Tip of the Month

If you've found a paper online but it's not open access, rather than going to the library website to search for it, just cut and paste the following text in front of the website address you're on:

http://ezproxy.canterbury.ac.nz/login?url=http://

Mike Steel

Conferences and Visits

Rick Beatson: to make a sabbatical visit to Germany from 6 September to 12 November.

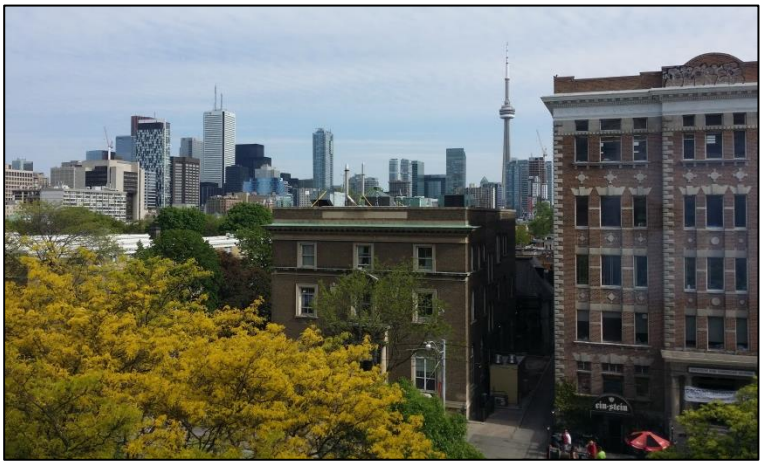
Charles Semple: to visit the National University of Singapore from 22 July to 1 August. He will participate in in the Institute of Mathematical Science's programme on Networks in Biological Sciences by giving an invited talk and delivering 4 tutorials.

Phil Wilson: made research visits to the Universities of York and Toronto, Canada, in June, while on sabbatical. (See below.)

Patrick W-Saart: gave a talk titled *Asymmetric Conditional Correlations in Stock Returns* at the 3rd RCEA Time Series Econometrics Workshop, Rimini Centre for Economic Analysis, Italy, 22 – 23 June 2015, while on sabbatical.

Canadian Research Visit

As part of his sabbatical, Phil Wilson spent 3 weeks in Toronto visiting Prof. Huaxiong Huang at York University and The Fields Institute. Together they worked on models of ion flux through biological membranes, fibrin aggregation in blood clots, electrowetting, and embryological morphogenesis. Phil reports that there was enough time for a visit to Niagara Falls but sadly none for poutine! Huaxiong, a two-time visitor to our School, will be returning next year as an Erskine Fellow.



Above left: *Intuition* by sculptor John Robinson consists of 3 interwoven equilateral triangles in a symmetrical arrangement and sits near the entrance to the Fields Institute for Research in the Mathematical Sciences. The sculpture is an angular version of the famous Borromean Rings - 3 rings linked together in such a way that removing any one ring leaves the other two unattached. The Borromean Triangles are the symbol of the Fields Institute. **Above right:** View of the Toronto skyline from Phil's office at The Fields Institute.

Papers Submitted

Huber, K. T., Moulton, V., Steel, M. and Wu, T. (2015). *Folding and unfolding phylogenetic trees and networks* (to Journal of Mathematical Biology).

McTavish, E.J., Steel, M. and Holder, M.T. (2015) *Twisted trees and inconsistency of tree estimation when gaps are treated as missing data -- the impact of model mis-specification in distance corrections* (to Moleculat Phylogenetics and Evolution).

Papers Accepted

Francis, A. and Steel, M. (2015). *Which phylogenetic networks are merely trees with additional arcs?* Systematic Biology (in press).

Gascuel, O. and Steel, M. (2015). *A 'stochastic safety radius' for distance-based tree reconstruction. Algorithmica* (in press).

Sanderson, M.J., Steel, M., Zwickl, D., McMahon, M., and Stamatakis, A. (2015). *Impacts of terraces on phylogenetic inference.* Systematic Biology (in press).

Sober, E. and Steel, M. (2015). *Similarities as Evidence for Common Ancestry — A Likelihood Epistemology*. British Journal for the Philosophy of Science (in press).

Steel, M. (2015). *Self-sustaining autocatalytic networks within open-ended reaction systems*. Journal of Mathematical Chemistry (in press).

Papers Published

Bartneck, C.,Duenser, A., Moltchanova, E., Zawieska, K. (2014): Comparing the Similarity of Responses Received from Studies in Amazon's Mechanical Turk to Studies Conducted Online and with Direct Recruitment PloS one 10 (4) which has been recently reviewed in the NZ Herald: http://www.nzherald.co.nz/lifestyle/news/article.cfm?c_id=6&objectid=11460068

Chor, B. and Steel, M. (2015). *Tree split probabilities determine the branch lengths.* Journal of Theoretical Biology 374: 54-59.

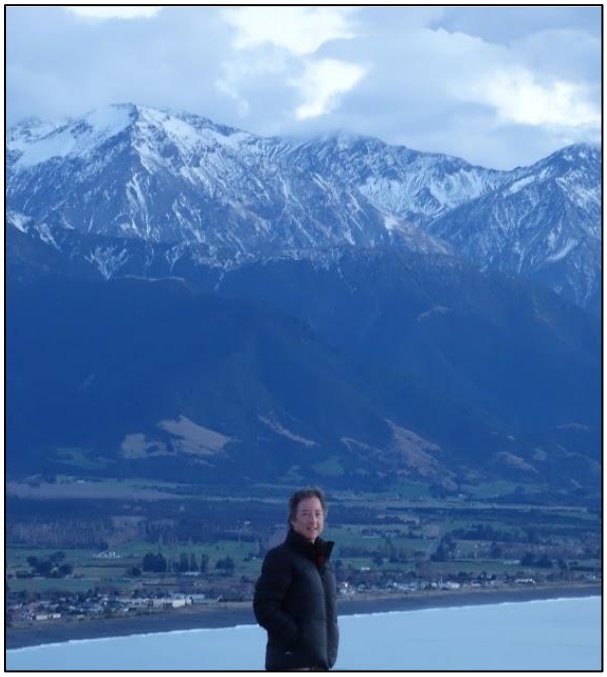
Hagen, O., Hartmann, K., Steel, M. and Stadler, T. (2015*). Age-dependent speciation explains empirical tree shape distribution.* Systematic Biology 64 (3): 432-440.

Hordijk, W., Smith, J. and Steel, M. (2015). *Algorithms for detecting and analysing autocatalytic sets.* Algorithms in Molecular Biology 10: 15.

Moltchanova, E. and Eriksson, J.G. (2015): Longitudinal changes in maternal and neonatal anthropometrics: a case study of the Helsinki Birth Cohort, 1934–1944 Journal of developmental origins of health and disease, 1-6.

Roch, S. and Steel, M. (2015). *Likelihood-based tree reconstruction on a concatenation of alignments can be statistically inconsistent*. Theoretical Population Biology, 100: 56-62.

Vale, R.: *A Model for Tax Evasion with Some Realistic Properties,* posted on the Social Science Research Network, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2601214



Wedding Gift

The School's wedding gift to Steve and Phillipa Gourdie – a Kaikoura break with perfect weather and spectacular wildlife.

Proof

Masters student Lisa Hall recounts her recent experience of 'treading the boards' in the production of "Proof":

As the token mathematician in a play about mathematics, I was able to explain the maths jokes to the rest of the cast and help them to get into the mind of a mathematician.

Working on *Proof* has been an exercise in self-reflection and has challenged me as I've worked to discover my inner actor. The play is both moving and funny as it explores mental illness and the different reactions of characters as they are confronted with this.

Working on the play has been a great opportunity but I'm still not quite sure how I feel about being told I was perfect for the role of a crazy person …

Thanks to everyone at Elmwood Players and to those from the School who supported the show.

Lisa Hall

The Next Generation of Mathematicians

Above left: Congratulations to PhD students Peter Jaksons and Rodelyn Avila on the birth of Felicity on 17 March. Peter now works for Plant and Food, Lincoln, and Rodelyn will resume her PhD studies shortly. **Above right:** Congratulations also to Blair and Emma Robertson on the birth of Eva Rose on 8 June.

News from the Library

- To recommend books to the Library, send the details to the Library Liaison Officer for Mathematics and Statistics, Assoc. Prof. Marco Reale http://bit.ly/1zwYHKa
- New books: Librarians' Picks of the Month http://canterbury.libguides.com/newbooks
- New titles for Mathematics and Statistics http://bit.ly/NVj1hV; for Mathematical Statistics http://bit.ly/MIS2WA; new-titles-list generator http://bit.ly/1brTI3E
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From the Web:

1. The Abel Prize Laureates 2015 http://bit.ly/1aiZFBJ
2. Farewell to John Nash (plus.maths.org) http://bit.ly/1HvlJCv
3. The Future of Proof (plus.maths.org) http://bit.ly/1z8WJh7
4. Math: Discovered, Invented, or Both? (Nature of Reality, PBS) http://to.pbs.org/1OsVUsl
5. In Mathematics, Mistakes Aren't What They Used To Be: Computers Are Changing the Way Proofs Are Done (Nautilus) http://bit.ly/1H8yfdA
6. Fighting Epidemics with Math (Pacific Standard) http://bit.ly/1FxwwPK
7. Is Mathematics Necessary for Doing Great Science? (Curious Wavefunction) http://bit.ly/1Is9RGV
8. Caring for the Community (Blog on math blogs) http://bit.ly/1bSaOuD
9. Oxford University Press Renews Sponsorship of MathJax™ http://bit.ly/1E7lf8p
10. The Lady Gaga of French Mathematicians Comes Stateside (New Yorker) http://nyr.kr/1yNO1Kz
11. At the Intersection of Math and Art (3quarksdaily) http://bit.ly/1MroM6O
12. How to Celebrate Math Poetry Month (Blog on Math Blogs) http://bit.ly/1yNDkY9
13. In Praise of Fractals and Poetry (Scientific American) http://bit.ly/1HPPtO1
14. The Shortest-Known Paper Published in a Serious Math Journal: Two Succinct Sentences (Open Culture) http://bit.ly/1bsHvPc
15. 150 Years of Mathematics in the UK – in Pictures (The Guardian) http://bit.ly/1LmOPb1
16. Mathematicians of the Future? (Slate) http://slate.me/1HgF9N4
17. Wakey Wakey [papers slow to be cited] (Nature News & Comment) http://bit.ly/1HKiY2K
18. The Golden Ratio: Design's Biggest Myth (Co.Design) http://bit.ly/1GuxpVC
19. Bamboo Mathematicians (National Geographic) http://bit.ly/1F2yd43
20. Whose Digital Content Is It Anyway? [DRM of eBooks] (The Guardian) http://bit.ly/1ynDK7P
21. Internet Searches Create Illusion of Personal Knowledge, Research Finds (American Psychological Association) http://bit.ly/1GJnNtX
22. The Story Behind Jar'Edo Wens, the Longest-running Hoax in Wikipedia History (Washington Post) http://wapo.st/1DffxwR
23.

And on the lighter side...

- A Professor Who Can Truly Multitask (InsideHigherEd) http://bit.ly/1cJ1HMw
- Bayesian Survival Analysis for "Game of Thrones" (Probably Overthinking It) http://bit.ly/1aW3ayX
- Einstein's Election Riddle (The Guardian) http://bit.ly/1QzsHxc
- Isaac Newton Creates a List of His 57 Sins, circa 1662 (Open Culture) http://bit.ly/1Fen1Gk
- Listen to Wikipedia Change and Grow (Boing Boing) http://bit.ly/1cP2QCh
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John Arnold | Mathematics/Statistics Liaison Librarian
http://canterbury.libguides.com/prf.php?account_id=45546