August-September 2015 Newsletter
Mathematics and Statistics

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

2015 University of Canterbury Innovation Medal

Congratulations to Rick Beatson who is to be awarded the 2015 UC Innovation Medal at a University Council function in November.

In announcing this award, Dr John Wood, Chancellor, said that the Innovation Medal recognizes Associate Professor Beatson's work on the development of radial basis function algorithms and their successful application in the laser scanning and geophysical modelling industries. His work has facilitated the growth of business and employment in Christchurch and overseas, particularly in the manufacture of medical devices and in mineral exploration. His work is a great credit to himself and the University of Canterbury.

Welcome to our School Visitors

Visitor	University	Host	From	To	Room	Extn
Thomas Forster	Cambridge	M McKubre-Jordens	10/8/15	14/8/15	605	8028
Danny Dolev	Hebrew, Jerusalem	R Sainudiin	17/8/15	2/9/15	605	8028
Alan Hastings	UC Davis	A James	26/8/15	15/9/15	720	8337
Robin Havea	South Pacific	D Bridges	1/9/15	17/9/15	605	8028
Kim Plofker	Union College NY	C Montelle	7/9/15	17/12/15	714	7687
Marta Casanellus Rius	Barcelona	M Steel	8/9/15	6/12/15	616	8876
Ingrid Daubechies	Duke, USA	McLaurin Lecture	24/9/15	25/9/15	605	8028
Jon Pitchford (Erskine)	York, UK	A James	24/9/15	30/10/15	607	8875

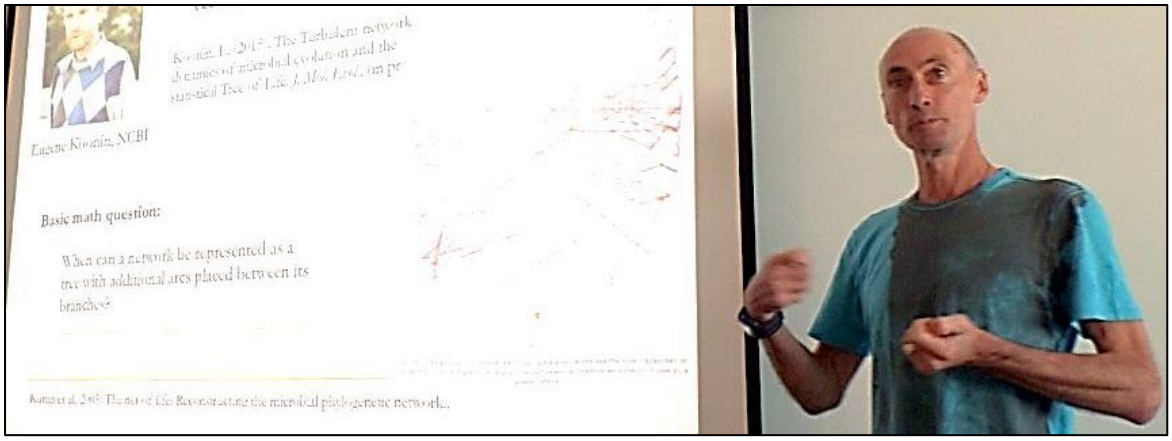
Erskine Fellow

Welcome to Dr Jon Pitchford, a familiar face who comes to us from the York Centre for Complex Systems Analysis at York University, UK. His field of special interest is Mathematical Ecology and he'll be teaching Fourier Systems and Laplace Transforms in MATH202, and Branching Processes and Poisson Processes in MATH407. He'll also be involved with postgraduate supervision and our seminar series. Jon is hosted by Alex James and will be based in Room 607 (extn 8875).

Associate Professor Marta Casanellus Rius

Welcome to Marta Casanellus Rius who is visiting for 3 months from the Applied Mathematics Department of the Technical University of Catalunya, Spain. Marta will be based in Room 616 and is being hosted by Mike Steel. She will be visiting with her husband and three children, aged 9, 6 and 4. Marta works in the area of algebraic statistics and computational biology.

- Mike Steel



Mike Steel giving an invited talk at an international workshop on phylogenetic networks, National University of Singapore, 27-31 July.

Conferences and Visits

Hannes Diener: inward visit by Robert Hannah, Waikato University, for a History of Mathematics seminar, 8-9 October.

Jeanette McLeod: research visit to Brendan McKay, Australian National University, Canberra, 23 August-5 September.

Clemency Montelle: visiting professorship (teaching into programme) at Chennai Mathematics Institute and invited speaker at the Conference on History and Development of Mathematics, Mumbai, 25 October-16 November.

Clemency Montelle: Kim Plofker research visit to UC, Chennai Mathematics Institute visit with Clemency, and Mumbai conference, 4 September-17 December.

Miguel Moyers-Gonzalez: research visit to Ian Frigaard, University of British Columbia, Canada, and to attend, as co-organiser, the BIRS for Viscoplastic Fluids Workshop at the Banff International Research Station, Alberta, Canada, 12 October–4 November.

Anggha Nugraha: Non-classical Logic: Theory and Applications Conference, Nicolaus Copernicus University, Torun, Poland, 22-30 September.

Raaz Sainudiin: invited by the Centre for Mathematics and its Applications, Ecole Polytechnique, Palaiseau, France, to work on a constructive randomized algorithm underpinning a well-known model of speciation that is not representable by an evolutionary construction. He will spend September in the Department of Mathematics, Stockholm University, Sweden, to work on enclosure arithmetics over pairs of trees and some learning-theoretic aspects of their recomputable and resilient distributed-machine representations under the project CORCON: Correctness by Construction, Seventh Framework Programme of the European Union, Marie Curie Actions-People, International Research Staff Exchange Scheme (IRSES).

Raaz Sainudiin: to present a talk titled *Ancestries of a Recombining Diploid Population* at the 5th Wellington Workshop in Probability and Mathematical Statistics (WWPMS 2015), Victoria University, Wellington, 19-20 November http://msor.victoria.ac.nz/Events/Nov2015WWPMS.

Raaz Sainudiin: *An Interval Tree Arithmetic for Computationally Amenable Operations with Maps in Metric Spaces*, 9 September 2015, Logic Seminar, Department of Mathematics, Stockholm University, Sweden. And on 29 September, a seminar on *Mayonnaise, Mustard and Mathematics: a Hydrodynamic Limit of a Correlated Site Percolation Model of a Viscoplastic Fluid,* at the Centre for Inter-disciplinary Mathematics seminar series, Uppsala University, Sweden.

Charles Semple: research visit to Geoff Whittle, Victoria University, Wellington, 11-14 August.

Mike Steel: conference speaker at Phylomania 2015, the UTAS Theoretical Phylogenetics Meeting, and speaker at a Workshop on Stochastic Processes in Biology, University of Tasmania, 10-19 November.

Gunter Steinke: NZMS 2015 Colloquium registration, University of Canterbury, 1-3 December. Also, giving a talk at the Conference on Combinatorial Mathematics and Combinatorial Computing (39 ACCMCC), University of Queensland, 6–11 December.

Congratulations!

Congratulations to Jasper Mackenzie on completion of his MSc degree. Jasper holds a Callaghan Innovation grant, which is co-sponsored by the Wynyard Group.

- Miguel Moyers-Gonzalez

Congratulations also to Josie Noble, daughter of our Adjunct Senior Fellow and part-time lecturer from AgResearch, Alasdair Noble, who has distinguished herself at the Special Olympics' Summer World Games in Los Angeles last month by winning New Zealand's first gold medal in the 100 metres freestyle event.

Academic Cloud-computing Infrastructure Grants

The proposal for UC's Scalable Data Science programme has been successful in the Databricks Academic Partners Program and Amazon Web Services Education Initiative.

These infrastructure grants allow scalable modules for big-data algorithmics and analytics to be incorporated into existing UC courses in the School across computational topics in optimisation, linear algebra and discrete mathematics. UC students and faculty can learn, teach, and conduct academic research in state-of-the-art distributed and scalable computing environments at no infrastructural cost.
http://www.math.canterbury.ac.nz/~r.sainudiin/courses/ScalableDataScience/

- Raaz Sainudiin

Paper Submitted

Mackenzie, J., Sainudiin, R., Smithies, J., and Wolffram, H.: *A Nonparametric View of the Civilizing Process in London's Old Bailey*, UCDMS Research Report No. UCDMS2015/1, 22 pages, 2015.

Papers Accepted

Asgari, H., Chen, X-Q., Morini, M., Pinelli, M., Sainudiin, R., Spina, P.R., and Venturini, M.: *NARX Models for Simulation of the Start-up Operation of a Single-Shaft Gas Turbine,* Applied Thermal Engineering, 10 pages, 2015.

Suwan, S., Lee, D.S. and Priebe, C.E. (2015): *Bayesian Vertex Nomination using Content and Context*. Wiley Interdisciplinary Reviews (WIREs) – Computational Statistics.

Yamada, S., Neshatian, K., and Sainudiin, R.: *Optimal Hyper-parameter Search in Support Vector Machines Using Bezier Surfaces*, Springer Lecture Notes on Artificial Intelligence Series, Proceedings of the 28th Australian Joint Conference on Artificial Intelligence, 6 pages, 2015.

Papers Published

Brown, J.A., Robertson, B.L. and McDonald, T. (2015) *Spatially Balanced Sampling: Application to Environmental Surveys*. *Avignon, France*: Spatial Statistics 2015, 9-12 Jun 2015. In Procedia Environmental Sciences 27 6-9.

Chladna, Z., and Moltchanova, E: *Incentive to Vaccinate: a Synthesis of Two Approaches,* Acta Mathematica Universitatis Comenianae (2015) 84:2 p267-281.

Watson, N.A.: *Inequalities Involving Heat Potentials and Green Functions*, Mathematica Bohemica, vol.140, No. 3, pp 313-318, 2014.

Zahari, M., Lee, D.S. and Darlow, B.A. (2015). *Algorithms that Eliminate the Effects of Calibration Artefact and Trial-imposed Offsets of Masimo Oximeter in BOOST-NZ Trial.* Journal of Clinical Monitoring and Computing, DOI 10.1007/s10877-015-9752-1.

Calling all MathSoc Members and Postgrads in Maths and Stats!

Starting this month, we'll have student talks every Friday at 4:00pm in Erskine 446. These informal talks are run for students by students and are a great opportunity to practise presenting in a friendly and supportive atmosphere. Each week we'll have 1 or 2 speakers giving short presentations. Talks can be on your current work or another topic relevant to students in science, for example science communication, data visualization, unconscious bias in science, a crash course in MATLAB or R, etc. Now and then, we'll also arrange collaborative cross-department student talks or invite a guest speaker, such as a member of staff from the School.

This is a great place to practise upcoming conference presentations in a more relaxed setting or to get more general presenting practice and feedback. The talks also provide a good opportunity for skill-sharing and getting to know other students who share an interest in Maths and Stats.

If you would like to give a talk or have any questions, please email rachelle.binny@pg.canterbury.ac.nz or giulio.dallariva@pg.canterbury.ac.nz. We look forward to seeing you all there!

- Rachelle Binny

News from the Library

- 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

From the Web

1. The Mercurial Mathematician [John Horton Conway] (Nature News & Comment) http://bit.ly/1MIWUXT
2. John Horton Conway: The World's Most Charismatic Mathematician (The Guardian) http://bit.ly/1OxaDli
3. The Singular Mind of Terry Tao (NY Times) http://nyti.ms/1Ov4wxL
4. Physics, Plato and Epistemology (Mathematics Rising) http://bit.ly/1D9KVD0
5. Famous Fluid Equations Are Incomplete (Quanta Magazine) http://bit.ly/1OlQycl
6. M.C. Escher's Visual Inquiries (Mathematics Rising) http://bit.ly/1KoHmec
7. The Courage to Venture Beyond: Of Polymaths and Multidisciplinarians (The Lindau Nobel Laureate Meetings) http://bit.ly/1KEKQte
8. Confounding Father (The Royal Society) http://bit.ly/1GGO0oR
9. Do We Know How to Judge Teaching? (Inside Higher Ed) http://bit.ly/1JqAXhu
10. A Numbers Game [research metrics] (Nature News & Comment) http://bit.ly/1Gaq5gZ
11. We Need a Measured Approach to Metrics (Nature News & Comment) http://bit.ly/1CsrODT
12. Metrics Have Their Place but Peer Review Remains King (Chemistry World) http://rsc.li/1I3Pa2Q
13. Can Wikipedia Survive? (NY Times) http://nyti.ms/1dyW3ga
14. Why Wikipedia + Open Access = Revolution (MIT Technology Review) http://bit.ly/1HGkFBY
15. Open Markets, Open Projects: Wikipedia and the Politics of Openness [book review] (Public Books) http://bit.ly/1ewgwDg
16. Social Media Is Narrowing Our Perspectives (InsideHigherEd) http://bit.ly/1CGd3xg

And on the lighter side...

- Poetry with Mathematics: Math Fun with Song Lyrics (Intersections) http://bit.ly/1JtlWqP
- What Do Mayonnaise and Hollandaise Have to Do with Math? (National Geographic) http://bit.ly/1GKo3Gb
- A Quick Puzzle to Test Your Problem Solving (NY Times) http://nyti.ms/1M8OFnI

John Arnold | Mathematics/Statistics Liaison Librarian
http://canterbury.libguides.com/prf.php?account_id=45546