

# Newsletter

## Mathematics & Statistics

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### WELCOME TO OUR NEW POSTGRADUATE STUDENTS

American PhD student **Erik Istre** (Room 522) would describe himself as a mathematician afflicted with philosophy. He would much rather spend his time doing mathematics, and only mathematics, but feels compelled to understand the underlying reason for doing the mathematics that he does. Thus, due to his interest in a philosophical position known as dialetheism, which asserts that "there are true contradictions", he has been led to study paraconsistent mathematics. He'll be working under Maarten McKubre-Jordens on the project "Non-classical Foundations of Analysis". His research is focused around 2 primary objectives: rediscovering the theory of non-well-founded set theory in paraconsistent set theory, and then applying this to the development of paraconsistent analysis. Beyond mathematics, he is looking forward to exploring NZ. He also passes the time with good books, good (or hilariously bad) movies, and video games.



**Jamie de Jong** completed an Honours degree in mathematics last year at UC. This year she will be working on a Masters thesis with Jeanette McLeod, Mike Steel and Simone Linz in the area of phylogenetics. This will involve looking at ways of rearranging phylogenetic trees, and determining the size of the neighbourhoods of trees that result from particular rearrangements. Jamie's main interest outside of university is trampolining, where she is involved as both a coach and a judge (and still enjoys jumping on a trampoline herself). Jamie is based in Room 525.

**Duy Ho** completed his Honours degree in mathematics here last year. This year, he has decided to continue his journey by starting a PhD. The topic is yet to be finalised but he is currently studying properties on the surface of a torus, with guidance from his supervisor Gunter Steinke. In terms of maths-related interests, he enjoys studying topology and abstract algebra. Other hobbies include drinking coffee, playing Starcraft / chess, and watching football. Duy is in Room 516.



**Isuru Hewapathirana** has just joined us from Sri Lanka. She obtained a scholarship from the Wynyard Group to study for a PhD in Statistics, in the area of Bayesian Predictive Analytics. Her research will be supervised by Dominic Lee, Jeanette McLeod and Elena Moltchanova. The topic of her research is "Bayesian Anomaly Detection in Noisy Dynamic Graphs." Apart from her research, Isuru enjoys going swimming, watching movies, and spending time with her family. She is based in Room 514.

### WELCOME TO OUR VISITORS

Visitor	University/Organization	Host	From	To	Room	extension
Richard Law	York	M Plank	18/1/14	4/4/14	605	8028
Michelle Dalrymple	Cashmere High School	J Brown	3/2/14	4/7/14	714	7687
Warwick Tucker (Erskine)	Uppsala, Sweden	R Sainudiin	21/2/14	30/3/14	607	8875

## CONFERENCES AND VISITS



### **BIRS WORKSHOP, BANFF**

Raaz Sainudiin and colleagues at the BIRS Workshop on Advances in Scalable Bayesian Computation at the Banff International Research Station for Mathematical Innovation and Discovery. Raaz gave a talk on *Statistical Regular Paving for Bayesian Nonparametric Density Estimation*.

This workshop brought together Computer Scientists, Mathematicians, and Statisticians from academia and industry (including Google and Facebook) to brainstorm and share current perspectives and methods in information processing and statistical decision-making with massive data.

### **Clemency Montelle:**

1. SPHERE-CNRS International Seminar “How to compute planetary latitudes: an unusual mathematical approach in a Sanskrit commentary” (University Paris Denis Diderot, Paris, France, 21 March 2014)
2. SAW (Sciences in the Ancient World) International invited speaker at seminar “The mathematics underlying parallax in Sanskrit sources” (Universite Paris Denis Diderot, Paris, France, 14 March 2014)
3. SPHERE-CNRS Reading Mathematical Texts International Day-long seminar “Āmarāja’s commentary on the Khaṇḍakhādyaka of Brahmagupta” (Paris, France 19 March)

**Timm Treskatis:** from 10 June to 31 July, Timm will be visiting the Institute of Numerical and Applied Mathematics at the University of Göttingen, Germany. This visit is generously funded by the European Union and the New Zealand Government under the OptALI exchange scheme. OptALI is a joint programme of five universities in New Zealand and Europe to foster optimisation and its applications in learning and industry. From Göttingen, Timm will travel to Austria to attend this year’s Gene Golub SIAM Summer School  $g^2s^3$  on simulation, optimisation and identification in solid mechanics. The summer school, to be held from 4 August to 15 August in the town of Linz, will allow 40 selected postgraduate students from around the world to gain advanced knowledge in the fields of inverse problems, material and topology optimisation, mathematical programming with complementarity constraints and adaptive finite elements. Timm is a PhD student in Computational and Applied Mathematics supervised by Miguel Moyers-González and Chris Price.

### **5<sup>th</sup> INTERNATIONAL WORKSHOP ON SET-ORIENTED NUMERICAL METHODS**

The School will be hosting the 5<sup>th</sup> international workshop on set-oriented numerical methods from 1 – 5 September 2014. The workshop coincides with the visit of Erskine Fellow Prof. Gary Froyland and is part of an annual series, previous workshops having been held in Mexico, Munich, Sydney and Dresden. This year’s workshop will address state-of-the-art developments in the field of set-oriented numerical techniques relevant to mathematical problems in dynamical systems and applications. The SON workshops provide a unique forum to bring together theoretical researchers developing different set-oriented methodologies and applied researchers needing and/or using topological and probabilistic tools for analyzing their models. The workshop will cover a wide range of application areas including but not limited to: models of fluid flow; advection-reaction-diffusion equations; biology; drug design; quasi-stationary stochastic processes; non-linear time-series analysis; dynamics of granular material; physical oceanography; and meteorology. Local researchers and graduate students are particularly encouraged to attend. For further information, see: <http://www.math.canterbury.ac.nz/son2014/> or contact Rua Murray.

### **FEEDBACK FROM STAT101 SUMMER STUDENTS**

*Some great quotes from satisfied STAT101 Summer students:*

"The thought of taking a summer course, let alone a Stats summer course, really didn't appeal to me. I didn't like the fact that I would have to redo a paper I didn't like. To be honest, I just didn't like Stats. So when I had to decide that afternoon if I wanted to do it, I thought 'Oh great, I'm going to be giving up my holidays to do Stats.' But here we are on the other side of it and I can honestly say I have no regrets whatsoever. I have come to actually liking Stats, and have developed an appreciation for its usefulness. This course has taught me that what you put in is what you get out, that working hard pays off. And of course time management and staying ahead. This is shown in my results, of which I couldn't be happier."

"I wanted you to know how great the environment is that you all create, especially when someone is in my position. Being as approachable as you all are is unique, and I hope you know that. I have passed on how great the experience you made was, and highly recommend Canterbury to my friends interested in tertiary study, because of my experience with the Statistics department."

### **POSITIVE FEEDBACK**

Rua Murray contributed to the course HEDN602 (Tertiary Teaching Method) at the end of last year and received very positive feedback from the students. I want to share some of the quotes that students used in their written reflections on effective teaching, where they cited Rua. There were many more, so I am only listing a few here:

*"As pointed out by Dr Rua Murray, learning is done by, not to, students. Therefore, teaching is not about passing information to students, but rather about motivating them to learn."*

*"First and foremost, effective teaching is about recognising that students are at the centre of the teaching experience: teaching is about the students, not the teacher (Murray 2013)"*

*"I found Dr Murray's advice to not create a disability for students by only giving them some information to be very useful."*

Well done Rua!

- Jennifer Brown

### **INDUCTION SESSION A SUCCESS**

Thanks to all those staff who assisted Elena Moltchanova and Maarten McKubre-Jordens with slides and presentations for the induction session they organized last month for our Mathematics and Statistics students.

Elena estimated attendance at around the 300 mark.

The aim of the session was to get the students off to a good start by showing them how to choose a tutorial group, where to find Learn, where to go for answers to questions, and how Maple TA works. It is hoped that this introduction will foster their interest in Maths and Stats beyond the basic obligatory courses.

### **PAPERS ACCEPTED**

Haq, A., Brown, J., Moltchanova, E., and Al-Omari, A.I. (2014): *Improved best linear unbiased estimators for the simple linear regression model using double ranked set sampling schemes*, Communications in Statistics – Theory and Methods.

Martens, A., Sainudiin, R., Sibley, C.G., Schimel, J., and Webber, D.: *Terrorist Attacks Escalate in Frequency and Fatalities Preceding Highly Lethal Attacks*, Plos ONE, 2014.

### **PAPERS PUBLISHED**

Sainudiin, R. (book chapter), Ceberio, I.M., and Kreinovich V. (eds): *An Auto-validating Rejection Sampler for Differentiable Arithmetical Expressions; Posterior Sampling of Phylogenetic Quartets*, Constraint Programming and Decision Making (Studies in Computational Intelligence, Springer Verlag, Berlin, pp. 143-153, 2014.

## NEWS FROM THE LIBRARY

- \* Library Liaison Officer for Mathematics and Statistics, Dr Phil Wilson <http://bit.ly/NKgZ2J>
- \* New books: Librarians' Picks of the Month <http://canterbury.libguides.com/newbooks>
- \* New titles for Mathematics and Statistics <http://bit.ly/NVj1hV>; new-titles-list generator <http://bit.ly/1brTI3E>

### From the Web

- 1a. Mathematical Beauty Activates Same Brain Region As Great Art or Music (ScienceDaily) <http://bit.ly/1czllmt>
- 1b. Comment re Beauty on "Mathematics Rising" <http://bit.ly/Nc2EjG>
2. Parallel Lines [crowd-sourcing mathematics] (Nature Comment) <http://bit.ly/1o6l8g4>
3. Looking for Pirates in the Sea of Content (Scholarly Kitchen) <http://bit.ly/LSwmJR>
4. Bogus New Impact Factor Appears (Scholarly Open Access) <http://bit.ly/1grb2X5>
5. The UK Government Looks to Double Dip to Pay For its Open Access Policy (Scholarly Kitchen) <http://bit.ly/1g0UAWT>
6. Publishers Withdraw More Than 120 Gibberish Papers (Nature.com) <http://bit.ly/1hvJuiu>
7. Schism in the Stacks: Is the University Library As We Know It Destined for Extinction? (UC Berkeley Alumni) <http://bit.ly/1ePdmqV>

### And on the lighter side...

- \* Helen Friel: Here's Looking at Euclid <http://bit.ly/1eh08mv>
- \* Mathematician Calculates 177,147 Ways to Tie a Tie (Discover Magazine) <http://bit.ly/1j5uixA>
- \* Has Anyone Ever Flipped Heads 76 Times in a Row? (Scientific American) <http://bit.ly/1evA2MM>
- \* Hypothetically Speaking (PHD Comics) <http://bit.ly/1fAjqZG>

John Arnold | Mathematics/Statistics Liaison Librarian  
<http://canterbury.libguides.com/profile/JohnArnold>