

School of Mathematics and Statistics Newsletter

October 2017

Welcome...

- to Tom Coleman who has joined us as a temporary Associate Lecturer (Education Focused) in Mathematics. Tom recently finished his PhD at the University of East Anglia as a student of Bob Gray, who in turn was a student of Nik Ruskuc.

Congratulations...

- to Ineke de Moortel who is being installed as President of the Edinburgh Mathematical Society at their Annual General Meeting on 13th October.
- to Daniel Bennett who successfully defended his PhD thesis entitled ‘On Plausible Counterexamples to Lehnert’s Conjecture’.
- to Fiona Macfarlane (Mathematical Biology) on her success in *XX Factor 2017* which was part of the *Explorathon Event* on 29th September. Fiona and Christina Fell (Statistics) both took part in this three part competition where three minute/ three slide talks were presented at Auchmuty High School, the Byre Theatre and online. After each presentation the audience voted for the most inspiring talk and had the chance to ask questions. Fiona won the online event and was placed 3rd at the High School event. You can watch the online videos of all of the presentations at the University’s Vimeo page:
<https://vimeo.com/channels/1296839>



Fiona, Christina and other XX Factor contestants

Public Engagement

- The *Copson Lecture 2017* with the title ‘Closing the Gap - the quest to understand prime numbers’ was given by Dr Vicky Neale, University of Oxford, on 22nd September. Attendance by students, staff and the general public was very good. This was the first Copson Lecture since 2009 and provided an excellent example of how mathematical research and the processes behind it can be explained to a wider audience. The School also plans to revive our second public lecture series, the Curle Lectures, in 2018.
- A number of members of the School were involved in activities at the *Explorathon Event* on 29th September. As well as the *XX Factor* competition mentioned above, Valentin Popov took part in the Bright Club stand-up comedy event in the Byre Theatre. Catriona Harris, Charles Paxton, Rick Camp, Claudia Faustino, Cornelia Oedekoven, Danielle Harris and Lindesday Scott-Hayward ran the research stand ‘Counting critters’ where they demonstrated different methods for estimating abundance and biodiversity.

- A big ‘Thank You’ from the Head of School to all members of the School who gave so generously of their time to organise and help with all the events for the First *Maths Week Scotland*. Ali Floyd, who has been coordinating the Maths Week Scotland events across all involved Scottish institutions sent the following message to Antonia Wilmot-Smith and the Head of School: ‘I wanted to send a huge, slightly belated, thanks to you and everyone at the University of St Andrews who contributed to Maths Week Scotland. We were truly amazed by the quality and creativity of things that happened through the week; I think what charmed me most about what I saw in St Andrews was the way you took inspiration from the historic setting to create something unique and cool.’

Grants

- Jon Fraser (PI) and Kenneth Falconer (Co-I) have been awarded an EPSRC grant of £366k for a project ‘Fourier analytic techniques in geometry and analysis’, mainly to fund a postdoc position.
- Len Thomas and collaborators have been awarded a consortium grant of US \$4.7million to develop updated population and individual health predictions for marine mammals affected by the Deepwater Horizon oil spill. The project acronym is CARMMA (Consortium for Advanced Research on Marine Mammal Health Assessment) due to PI Lori Schwacke of US National Marine Mammal Foundation. The CREEM component of the work will be to integrate the data collected by other researchers into updated population models that predict long-term population recovery.
- Magda Carr (Co-I) and Masoud Hayatdavoodi (PI from Dundee) have been awarded an Energy Technology Partnership Doctorate award of £30k towards an Energy Industry Studentship which will help support a PhD student for 3 years. The student will be based in Dundee and will be working on the elastic response of floating offshore wind turbines to waves, wind and currents.

Visits and conferences

- Helen Burgess attended the workshop *Vorticity in the Universe* at the Aspen Center for Physics in Aspen, Colorado from 27th August – 17th September.
- Nik Ruskuc visited Bob Gray at the University of East Anglia from 9-13th October, to continue their ongoing project on one relation monoids.
- Han Yu took part in a Clay research workshop *Ergodic Theory: Numbers, Fractals and Geometry* in Oxford from 24-28th September. This included attending the 2017 *Clay Research Conference* on September 27th.
- Peter Cameron spoke at a *PhD Summer School on Permutation Groups* at Marienheide, Germany, run by the Experimental and Constructive Algebra Group at RWTH Aachen. He gave five lectures introducing permutation groups and applications to semigroups, and also ran the problem session which was held outdoors as the weather was warm.



Peter enjoying the luxury of working outdoors



The Badary Radio Observatory with the Eastern Sayan mountains of Southern Siberia in the distance

- Patrick Antolin and Tom Elsdon gave invited talks at the *Russian-British Seminar of Young Scientists* in Irkutsk, Russia from 18th-21st September. Patrick spoke about transverse wave induced Kelvin-Helmholtz rolls in solar spicules, while Tom discussed the structure of 3D Alfvén Resonances. Whilst there they took a trip to the Badary Radio Observatory which is located close to Irkutsk.
- Martyn Quick, Colva Roney-Dougal and Colin Campbell attended the joint meeting of the Edinburgh Mathematical Society and Societat Catalana de Matemàtiques from 27-29th September at the ICMS in Edinburgh. Martyn spoke at the special session on Geometric Group Theory on ‘Presentations for Thompson’s group V and its generalisations’.
- Alla Detinko gave a seminar talk entitled ‘Computing with infinite linear groups: methods, algorithms and applications’ at the University of Warwick and again at the University of Aberdeen.
- Janine Illian was a member of the PhD jury for Yimer Wasihun Kifle's PhD defence at the University of Hasselt, Belgium, assessing a thesis ‘Statistical and mathematical methods to improve models of infectious disease transmission in and between human and animal populations’.
- Rosemary Bailey spent three weeks in September at the Phenomics and Bioinformatics Research Centre of the University of South Australia. While there, she participated in the meeting of the External Advisory Board of PBRC, gave a seminar on ‘Hasse diagrams as a visual aid for linear models and analysis of variance’ and continued her research with Chris Brien on the design and analysis of multitiered experiments.
- Rosemary Bailey took part in the annual *Trondheim Symposium in Statistics* on 6-7th October. This took place in a residential centre away from the university to encourage the (apparently British!) practice of staff and research students talking together over a beer (or two). Each of the Statistics PhD students from the Norges teknisk-naturvitenskapelige universitet (NTNU) gave a ten-minute talk about their work and Rosemary gave a (rather longer) talk on ‘Block designs with very low replication, and other challenges in design of experiments’.

Visitors

- Loukas Vlahos, from the University of Thessaloniki, Greece, visited the Solar Group from 30th August-1st September and gave a seminar on ‘Turbulent reconnection on Solar Corona’.
- Hiroki Takahashi from Keio University in Japan visited Mike Todd for a week in September to discuss work on equilibrium states in unimodal maps. He also gave a talk in the Analysis Seminar on Ergodic Optimisation.
- Dalia Terhesiu from Exeter visited Mike Todd for four days to continue their joint work on the smoothness of phase transitions in a neighbourhood of an infinite measure system. Dalia also gave a talk on ‘Renewal Theory in Dynamical Systems’ in the Pure Maths Colloquium.

Other News

- Mike Todd has been appointed to the Editorial Board of the *Proceedings of the Edinburgh Mathematical Society*.
- Claudia Faustino, a PhD student in Statistics, has decided to set a personal challenge to raise awareness and support Cancer Research UK. She wishes to donate her hair to make into wigs for people with cancer, she will be chatting to people and also providing cake in some departments throughout this month. She is accepting donations via <https://www.justgiving.com/fundraising/claudia-faustino> and looks forward to seeing where this challenge will take her!
- For those into social media, CREEM now has a Twitter account, posting on their coffee-time cake culture https://twitter.com/CREEM_cake

Future Events

- This semester's History of Mathematics lecture will be at 4pm on 22nd November, when Tony Royle (Open University) will talk on 'The Perilous Practice of Flying and Applying'. He will discuss how early aeronautical research in Britain was advanced by allowing a number of the nation's finest mathematicians to train as pilots and conduct airborne experiments using full-scale aircraft, and he will consider what justified the risk, given that many would subsequently perish in flying accidents.
- A reminder that, to mark the centenary of D'Arcy Thompson's book *On Growth and Form*, Evelyn Fox Keller (MIT) will give a public lecture 'Mathematics in Biology - Has D'Arcy Thompson been Vindicated?' at 6.30pm on Saturday 14th October in Parliament Hall. The lecture is free, but registration is required at <https://www.eventbrite.co.uk/e/evelyn-fox-keller-the-fauvel-lecture-tickets-37333874624>

Next Issue

- The next edition of the School Newsletter will be circulated in November. Items for inclusion may be sent to schoolnews@mcs.st-andrews.ac.uk at any time but a reminder will be sent out a week before the deadline.