

School of Mathematics and Statistics

Newsletter

December 2019

Congratulations ...

- to Danielle Harris and partner Ben on the birth of their baby girl, Pip, on 14th October. Everyone is doing very well.
- to Amlan Banaji on winning the Faculty of Science *Postgraduate Gray Prize* awarded for the best MSc performance amongst this year's MSc graduands. Amlan has now started a PhD in the Analysis Group.

Visitors

- Leonard Soicher, from Queen Mary University of London, visited St Andrews in early December, mainly to discuss GAP matters, in particular, the release of the new version of the GRAPE package, with Alexander Konovalov. Leonard also worked with Rosemary Bailey and Peter Cameron on revising a joint paper. Somehow he also found the time to work with Rosemary on semi-Latin squares and with Peter on synchronization. Leonard's visit was supported by the EPSRC-funded CoDiMa (Computational Discrete Mathematics) Collaborative Computational Project.
- Victoria Gould from the University of York visited Nik Ruskuc for several days to work on a joint project proposal on Noetherian and coherent semigroups.

Grants

- Alan Cairns is part of a group that has been awarded a contract by Culham Centre for Fusion Energy to investigate microwave current drive in STEP (Spherical Tokamak for Energy Production). STEP is a project that was recently awarded an initial grant of £220M by the UK government to demonstrate fusion power production by 2040. The group looking at microwaves is led by Professor Roddy Vann from York and involves groups from York, Strathclyde (where Alan is Visiting Professor of Physics) and Stuttgart.

Conferences Organised

- Ruth Bowness and Cicely Macnamara, with the support of the rest of the Mathematical Biology group, organised the *Scottish Mathematical Biology Forum 2019* on 5th December at ICMS in Edinburgh. The format of the workshop included brief overview talks highlighting the range of current mathematical biology research across Scotland. In addition to showcasing excellent research, the event helped to stimulate new collaborative projects and to share expertise across the discipline. We have helped to establish this meeting as an annual event for the community.
- On 8th December, Isobel Falconer organised the *British Society for the History of Mathematics Christmas Meeting* at the University of Warwick. This was a deliberately eclectic meeting, with eight talks ranging from the Pythagorians and 8th century Irish monks to 20th century programming languages

Visits, Seminars and Conferences

- Colva Roney-Dougal and Martyn Quick presented a double act at Newcastle University on 19th November when Colva gave a seminar entitled 'Polynomial-time proofs that groups are hyperbolic' immediately followed by Martyn on 'The structure of groups with specified quotients'. Then the next day Colva gave a seminar at the University of Lincoln, again on 'Polynomial-time proofs'.

- On 4th December Martyn Quick went to Cambridge to deliver a talk at the University of Cambridge Centre for Mathematical Sciences *Algebra and Representation Theory Seminar* entitled ‘Presentations for Brin’s higher-dimensional Thompson groups nV ’.



Wild boar that roam around CIRM at night

- Kenneth Falconer, Jon Fraser, Istvan Kolossvary and Mike Todd attended the conference *Thermodynamic Formalism: Dynamical Systems, Statistical Properties and their Applications* from 9-13th December at the Centre International de Rencontres Mathématiques (CIRM) in Luminy, just outside Marseille. Kenneth, Jon and Mike gave invited talks.
- Mike Todd spent November (mostly) in Porto as an FCT *Cientista Convidado* (invited scientist), working with Ana Cristina Freitas and Jorge Freitas on Extreme Value Theory in dynamical systems for heavy-tailed observables. He also worked with Jerome Rousseau on closest orbit approaches in dynamical systems. He gave talks on ‘Escape of Entropy’ in Lisbon, Porto and Queen Mary University of London.
- Peter Cameron visited Université de Paris-Saclay on 29th November to be on the jury (as a rapporteur) for Justine Falque’s PhD thesis defence. In her thesis, she proved a conjecture that Peter made 35 years ago. On the way, he visited Imperial College London, where he spoke to the *Logic Seminar* on ‘Growth rates and orbit algebras for oligomorphic permutation groups’, and to the *London Algebra Colloquium* on ‘Diagonal groups, synchronization, and association schemes’.
- PhD student Paul van Dam-Bates gave an invited talk at the Canadian Statistical Sciences Institute meeting at Western University, Canada, a seminar at the University of Victoria, and a popular science talk about interesting historical probability problems at the University of Quadra, Herriot Bay Inn Pub(!), Canada.
- Cornelia Oedekoven travelled to Mazatlán, Mexico in early November to lead an international team of scientists, drone pilots and mechanics from four countries (Mexico, USA, Germany and Chinese Taipei), during a 14-day offshore research survey on board the Mexican research vessel Dr Jorge Carranza Fraser. The trial survey aimed to evaluate how drones can be used to improve abundance estimates of dolphin stocks during future surveys in the eastern tropical Pacific. The project is a research collaboration between the Inter-American Tropical Tuna Commission (Dr Cleridy Lennert-Cody) based in La Jolla, California, and the University of St Andrews, funded by the Mexican government and the Pacific Alliance for Sustainable Tuna.



Research vessel Dr Jorge Carranza Fraser

- David Borchers and PhD student Filippo Franchini spent two weeks in Nakai Nam Theun National Protected Area in the Lao People's Democratic Republic, working with the conservation organisation Anoulak

<https://www.conservationlaos.com/about/nakai-nam-theun/> to test an acoustic drone that Filippo and colleagues developed, to survey gibbons. They learned a lot about surveying in tropical jungle carrying 80-90lb packs of equipment through jungle over a 2,000 ft mountain, eating sticky rice with hot chillis for all meals, and about spiders, snakes, ticks and leeches.



The gibbon survey team at the Lao field site

- Many members of CREEM attended the World Marine Mammal Conference and/or associated workshops and meetings, in Barcelona 12-19th December with about 2,500 attendees. Len Thomas and former PhD student Rocio Gonzalez held a morning workshop on developments in distance sampling, at which David Borchers, Richard Glennie, Tiago Marques and Cornelia Oedekoven gave talks. Catriona Harris and Dave Miller followed up with another popular workshop on spatial density surface modelling, at which they, Len and Phil Bouchet gave presentations. The next day, Catriona, Len and Saana Isojunno held a workshop on dose-response modelling. At the conference, Cornelia, Catriona and Len presented posters, while Gui Bortolotto, Phil Bouchet, Ian Durbach, Eiren Jacobson and Tiago Marques gave talks. CREEM (Biology) PhD student Katherine Whyte won an outstanding student presentation prize – Congratulations Katie!
- Rosemary Bailey was a member of the EPSRC Peer Review Grant Panel for *Hubs for Mathematical Sciences in Healthcare* which met on 2nd December.
- David Rees Jones attended the *American Geophysical Union Fall Meeting* in San Francisco 9-13th December, alongside 28,000 others, and presented an enormous poster about links between the deglaciation of Iceland and volcanic eruptions.
- Isobel Falconer attended the *Physical Constants Conference* in Edinburgh on 5-6th December for an invited talk: 'To G or not to G: J.H. Poynting and the gravitational constant in the 19th century'.

Public Engagement

- Colva Roney-Dougal gave the Loughborough Mathematics Department's Christmas Lecture on 5th December 5th, entitled 'The million-dollar shuffle'.

Future Venture

- The School recently launched new MSc and PGDip degrees in Statistical Ecology for September 2020 entry. A poster and a pamphlet publicising these degrees is now available at <https://www.creem.st-andrews.ac.uk/itemID/5747/> If you know of any prospective students for these degrees, or have contacts with individuals or organisations who might be willing to publicise them, please send the poster and pamphlet to them, or point them at the above website.

Next Issue

- The next edition of the School Newsletter will be circulated in January. 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.