

School of Mathematics and Statistics

Newsletter

September 2020

Welcome...

- to Yoav Len who has finally set foot in the Maths Institute after a long sojourn in Canada waiting for a visa and then quarantining on arrival. Yoav joins the Pure Mathematics Division having previously worked at Georgia Tech.
- to all our new PhD students. *Solar Theory*: Harry Callingham, George Chouliaras, Rachel Davies, Kate Mowbray, Lilli Maria Nadol, Ann Vaseekar; *Fluids*: Russell Campbell; *Mathematical Biology*: Konstantinos Alexiou; *Algebra and Combinatorics*: Dorte Behrens, Bromlyn Cameron, Laura Johnson, Yifei Qian; *Analysis*: Raquel Couto (Co-tutelle with Porto), Alex Rutar, Jian-Ci Xiao (year abroad from Zhejiang University); *Statistical Ecology*: Abinand Reddy, Savannah Rogers; *Statistical Medicine*: Puchong Paophan. We hope that all our new students will settle down in these strange times and we look forward to meeting everyone in person.

Welcome back ...

- to Alexei Borissov and Jack Reid. Alexei completed his PhD in St Andrews in 2018 and then worked at the University of Edinburgh for about two years as a Research Software Engineer, supporting and developing codes for large-scale cosmological simulations. He has now (re-)joined the Solar Theory as a Postdoc funded by the ERC Synergy Grant ‘The Whole Sun Project’ (PI Vasilis Archontis). Jack, who defended his PhD in August, will start as a postdoc on 1st October funded by the Solar Group’s STFC Consolidated Grant.
- to Feyisayo ‘Shayo’ Olukoya, who completed his PhD with us in May 2018, and who will be with us until the end of September on an LMS Early Career Fellowship, before leaving for Ningbo, China for his new contract post at Nottingham University in Ningbo.

Farewell ...

- to Haipeng ‘Clarence’ Chen who returned to China on 12th September after a year as a lively member of the Analysis Group, first in person and then online. He’s now quarantining for 14 days in Shanghai. Clarence has just finished his PhD thesis which he expects to defend in December.

Congratulations...

- Congratulations to Hendrik-Jan Van Damme who successfully defended his PhD thesis entitled ‘Numerical Modelling of MHD Waves in Coronal Loops’ on 31st August.
- to PhD student Chiara Villa who won first prize in the poster competition at the *Annual Meeting of the Society for Mathematical Biology*, 17-20th August. The poster presented extensions of the theory of mechanochemical models of pattern formation in biological tissue, to include a wide variety of models of linear viscoelasticity, since the usual model is not the best suited one for biological tissue. The work highlights that models capturing viscous flow have a much higher pattern formation potential than those which do not, and so emphasises the importance of good modelling assumptions.

Virtual Activities

- Natalia Jurga gave a short talk ‘How long is the Chaos Game?’ in the Smooth Ergodic Theory Minisymposium in the online version of the *Dynamics Days* conference in the last week of August.
- Mike Todd was supposed to be organising a session ‘Large deviations and rare events in dynamical systems’ at the conference *Dynamics Days* in Nice in the last week of August. In theory the conference has been postponed to 2021.
- Kenneth Falconer gave the Pure Mathematics Colloquium (virtually) at The Ohio State University on 27th August.
- Collin Bleak participated in the *162nd European Study Group with Industry* on 20-24th July, which involved many adventures and interesting problems from pure, applied, and statistics perspectives. While participating in other problems, Collin was asked to be a co-facilitator (problem leader/team organiser) in support of Innovation Embassy’s project *Predicting Customer Lifetime Value from Early Usage Data*. A project report will be finalised soon.
- Collin Bleak spoke in the *Symmetry in Newcastle* series hosted at the University of Newcastle in Australia. On 7th August he spoke on ‘Complexity among the finitely generated subgroups of R.Thompson’s group F ’ The talk is on Youtube at <https://www.youtube.com/watch?v=qUWf2xDeFVw&feature=youtu.be>
- From 24-30th August, Rosemary Bailey, Collin Bleak, Peter Cameron and Liam Stott attended (virtually) the *2020 Ural Conference on Group Theory and Combinatorics*, at Yekaterinburg in Russia, on the border between Europe and Asia. Rosemary gave a plenary talk on ‘Latin cubes’, Peter took a journey ‘From de Bruijn graphs to automorphisms of the shift’ and Liam contributed a talk on ‘Trees and cycles’. Rosemary’s laptop died during a session that she was chairing, but unperturbed, she carried on with a different machine and spent the rest of the conference under the name Peter Cameron. Meanwhile, Peter was moonlighting at a conference in Nancy, France, on *Algebra, Graphs and Ordered Sets*, to mark the 75th birthday of Maurice Pouzet. The three-hour time difference between the Urals and France made this feasible and only a few talks clashed.
- Martyn Quick was invited to speak at *GEARS (Glasgow and Edinburgh Algebra Research Students)* at the beginning of March with the intention that he would give two talks in person in late summer. As a consequence of the pandemic he delivered two talks live but online on 21st August. The first was an introduction to one of his research interests titled ‘An introduction to profinite groups and the just infinite property’ and the second at research-level ‘The structure of groups with specified quotient’.
- Colin Campbell, Simon Jurina and Colva Roney-Dougal attended *Groups in Galway 2020 – Online Edition* from 9-11th September. Apart from the usual lectures the meeting ended with a live session of Irish music played by four of our Galway colleagues.
- Richard Glennie attended the *Royal Statistical Society International Conference* online from 7-10th September and presented a talk entitled ‘Understanding the stochastic partial differential equation approach to smoothing’ in the *Challenges and advances of spatial modelling in ecology* session organised by the National Centre for Statistical Ecology.
- Andy Lynch spent 15th September at the very swish *Illumina Epigenetics: The full picture* conference. While the picture may be full, it is quite small in the browser window. There were lots of talks on mathematical, statistical and computational modelling of epigenetic data and one very interesting talk using two Scottish health data sets.

[For the uninitiated, epigenetics is the study of heritable changes in gene activity caused by mechanisms other than DNA sequence changes, and *Illumina* is an American company that develops and manufactures systems for the analysis of genetic variation and biological function.]

- Rick Camp gave a talk ‘Estimating bird density from single automatic passive acoustic recorders’ at the *27th Hawaii Conservation Conference* on 2nd September that was hosted virtually. The presentation was co-authored with Steve Buckland, Tiago Marques, Len Thomas and collaborators from the University of Hawaii at Hilo.
- On 16th September Isobel Falconer was opening speaker at the Institute of Physics conference *200 Years of Electromagnetism*, celebrating the bicentenary of Ørsted’s discovery of electromagnetism. The conference should have been in Bristol, but was shifted to online resulting in an audience of over 120. Her invited talk was entitled ‘Electromagnetism in the Encyclopaedias’.

Other News

- Having successfully defended his PhD thesis over summer, Ashley Clayton will give a series of five lectures on ‘Direct and subdirect products in groups, semigroups and algebras’ in late September aimed at starting researchers within the LMS sponsored NBSAN (North British Semigroups and Applications Network).

Next Issue

- The next edition of the School Newsletter will be circulated in October. Items for inclusion may be sent to maths-news@st-andrews.ac.uk (NOTE NEW EMAIL ADDRESS) at any time but a reminder will be sent out a week before the deadline.