School of Mathematics and Statistics Newsletter

April 2019

Visits and Conferences

• Rosemary Bailey and Peter Cameron spent the Spring break at Worcester Polytechnic Institute in Worcester, Massachusetts. The primary reason for the visit was that Peter was on the PhD committee of candidate Brian Kodalen. In addition, Rosemary and Peter gave departmental colloquia on 'Finding good designs for experiments' and 'The random graph'. Rosemary also spoke in the *Discrete Mathematics Seminar,* on 'Latin squares: Some history, with an emphasis on their use in designed experiments', and Peter spoke to the *MIT Combinatorics Seminar* on 'Synchronization'. Several joint research projects were begun, with Bill Martin, Brian Kodalen, Padraig Ó Catháin, and Bill Kantor.

Mathematics at the Birch Tree Bread coffee shop with Brian, Peter and Bill

• Michael Papathomas was an invited participant at the *Multiple Systems Estimation workshop* at the University of Edinburgh, 21st-22nd March. Two special issues are expected to be published as outcomes from this workshop, by journals with a focus on Criminology and Modern slavery.

• Janine Illian was an invited speaker at *DAGStat2019 (Deutsche Arbeitsgemeinschaft Statistik)* in Munich, the largest German statistics conference, from 18th-22nd March. She then spoke at the *Emergence - Second International TRANSIT workshop on Cross-disciplinary Research* in York on 27-28th March on 'Quantifying emergent spatial patterns: an application in cancer'. Janine was also external examiner for PhDs at the University of Abertay and at the University of Bergen.

• Jonathan Hickman spent the week of 18th-22nd March visiting Stockholms Universitet to work with collaborators Odysseas Bakas and Salvador Rodriguez Lopez. Whilst in Stockholm, he gave a talk at KTH Royal Institute of Technology entitled 'High dimensional Kakeya estimates' and he also visited the Mittag-Leffler Institute.

• Jon Fraser gave a seminar on 'Dimensions of Kleinian limit sets' on 27th March at Stony Brook University. When visiting Stony Brook he was hosted by Chris Bishop and he also visited Bruce Kleiner at New York University.

• Sophie Huczynska visited Maura Paterson at Birkbeck, University of London, from 26-28th March, to continue working on their research about external difference families and Algebraic Manipulation Detection (AMD) codes.

• Kenneth Falconer and Mike Todd attended the conference *Dynamics, Measures and Dimensions* in the splendid surroundings of Pałac Będlewo, Poland, from 8-12th April. Mike gave an invited talk on 'Escape rates for multimodal maps with holes' and Kenneth, who was on the Scientific Committee, spoke on 'Intermediate dimensions'. The meeting was to celebrate the 60th birthday of Maurisz Urbanski, and a highlight was the conference banquet at which a roast pig was ceremoniously brought in to the dining room.

- Mike Todd gave a talk on 'Statistical stability in dynamical systems' in the Analysis Seminar at the University of Glasgow on 14th March.

- Patrick Antolin gave a seminar talk at the *Mullard Space Science Laboratory* (MSSL) on 19th March, entitled 'Transverse MHD waves and associated dynamic instabilities in the solar atmosphere'. Patrick also attended the *STFC Ernest Rutherford Fellowship Induction Workshop* at Polaris House, Swindon the 20th March.

- Eric Priest recently gave several invited reviews: 'Future key questions for solar Physics' at the *European Geophysical Union General Assembly* in Vienna from 9-12th April; 'Our universe and the questions it suggests', at the *Symposium on Understanding our Place in the Universe: Beyond the Legacy of Stephen Hawking* in Jerusalem, 17-20th March; 'Heating the solar corona by magnetic flux cancellation' at the *Workshop on Loops and Jets* in Göttingen, 4-8th March. He also gave a colloquium on 'Models for heating the solar corona' at the *Max Planck Institute for Solar System Science*, in Göttingen on 6th March.

- Thomas Neukirch attended the *European Geosciences Union (EGU) General Assembly* which took place from 7-12th April in Vienna. Thomas gave a talk 'Analytical 3D Magnetohydrostatic Equilibria for Modelling Solar Magnetic Fields'. To his (pleasant) surprise he learnt a day before the talk that the session organisers had 'elevated' the status of his talk from 'contributed' to 'solicited'! Thomas took the opportunity for discussions with former St Andrews PhD student Oliver Allanson (University of Reading), former St Andrews PostDoc Thomas Wiegelmann (Max-Planck-Institute for Solar System Research, Göttingen) and his long-term research collaborator Michael Hesse (University of Bergen).

Grants

- Jon Fraser has been awarded a Leverhulme Trust Research Project Grant £324k for a project 'New perspectives in the dimension theory of fractals'. The projects seeks to develop a robust theory of 'dimension interpolation', with potential applications in embedding problems, arithmetic geometry and dynamical systems.

Public Engagement

- On 27th March Len Thomas gave a talk on 'Counting Critters' to about 30 members of *Cupar Rotary Club*.

- On 4th April Tiago Marques visited a school in Lisboa as part of a *Portuguese Statistics Society* project 'Statistics goes to school'. He gave a talk and, along with MSc students, delivered an activity about plastic pollution, biodiversity and estimating biological diversity. He was also interviewed by the school radio.

- On 6th April Isobel Falconer gave a public lecture at the *Edinburgh Science Festival* entitled 'James Clerk Maxwell in Six Objects'. The talk on the life and work of Maxwell was focused around original items made and used by Maxwell himself.

Five of the six objects: Zoetrope with hand drawn strips, Saturn's rings model, Kew magnetometer, Apparatus to measure ratio of electrostatic to electromagnetic units, Polariscope and strained glass samples.

Future Events

• Daniel Mitchell (RWTH, Aachen) will be giving this semester's History of Mathematics talk 'The Etherealisation of Common Sense? Late Victorian Opposition to Maxwell's Mathematics of Measurement' on Tuesday 23rd April at 4pm, Lecture Theatre D in the Mathematical Institute. All are welcome. Daniel will be visiting the School from 22nd-26th April funded by an LMS grant to work with Isobel Falconer.

Other News

• Congratulations to the Pure Maths team of Peter, Tom and Kenneth for winning the annual SUMS quiz on 4th April.

• Tom Coleman has been nominated for a *Students' Association Teaching Award* in the category of Innovative Teaching. These awards are based on student nominations and the award ceremony takes place on 22nd April.

The SUMS quiz winning team

Next Issue

• The next edition of the School Newsletter will be circulated in May. 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.