

School of Mathematics and Statistics Newsletter

August 2022

Congratulations ...

- to Filippo Franchini for successfully defending his PhD thesis on 10th August on ‘Continuous-time acoustic spatial capture recapture with moving microphone arrays: estimating gibbon abundance with drone-borne microphones’.
- to the ‘Diverse Posters for the Mathematical Institute’ STEP team on winning the Best Team Award out of 21 teams from across the University. STEP (Summer Team Enterprise Programme) is a remote skills development programme run by CEED (Centre for Educational Enhancement and Development). The team, which was led by PhD student Liam Stott and sponsored by Aidan Naughton and Isobel Falconer, comprised undergraduates Laila Deen, Rachel Parker, Finn Wheatley, Finlay Charleson, Evie Wilson and Meredith Millward. They have researched and created 5 posters about some of our more diverse alumni, which we hope will soon be brightening up the walls of the Mathematical Institute.

Welcome

- Welcome back to Saul Freedman, who has just rejoined us as a postdoctoral fellow on a 6 month EPSRC award after passing his PhD with us in July.

Visitors

- Craig Miller from the University of York visited Nik Ruskuc and Matthew Brooks as part of a joint EPSRC-funded project into congruences, acts and finiteness conditions of semigroups.
- Pablo Shmerkin and Alexia Yavicola, who had previously spent a year with us, largely during covid lockdown, revisited the Analysis Group from 9-16th August.

Conferences, Talks and Visits

- *The British Early Career Mathematicians’ Colloquium 2022* (BECMC) took place in Birmingham from 21st-22nd July. Plenary speakers included Natalia Jurga, who spoke on ‘Fractal limit sets of matrix semigroups’ and Isobel Falconer on ‘What can history of maths do for you?’. Alex Rutar gave a short talk on ‘Attainable forms of intermediate dimension and Kate Hindle gave one on ‘Is it a bird? Is it a plane? D’Arcy Thompson on flight’.
- Rosemary Bailey, Peter Cameron, Laura Johnson and Jack Southgate attended the *29th British Combinatorial Conference* at the University of Lancaster on 11-15th July. Rosemary and Peter spoke in a minisymposium on *Designs and Algebraic Structures*, Rosemary on ‘Resistance distance in the context of association schemes and coherent configurations’, and Peter on ‘Finding geometries in the power graphs of simple groups’. Laura contributed a talk on ‘An introduction to DPDFs and EPDFs’. At the Business Meeting, Peter stepped down as chair of the British Combinatorial Committee after 30 years in the role, and was elected as a backbench member of the Committee.

- *Groups St Andrews 2022*, held at Newcastle University from 30th July-7th August, was the 11th Groups St Andrews meeting, which has been organized by St Andrews staff every 4 years (normally) since 1981. The St Andrews trio of Colin Campbell, Edmund Robertson and Rick Thomas have the distinction of being the only people to have attended all 11 meetings. This year, Martyn Quick and Colva Roney-Dougal were members of the organising committee. Saul Freedman, Alan Logan, Jiaping Lu, and Peiran Wu all contributed talks and Scott Harper, a former St Andrews undergraduate and about to rejoin us as a postdoc, was an invited 1-hour speaker. Other former St Andrews students or postdocs who contributed talks were Casey Donovan, Alexander Hulpke, Kamilla Rekvényi and Aluna Rizzoli.



Rick Thomas, Colin Campbell and Edmund Robertson who have attended all 11 Groups St Andrews meetings

- Colva Roney-Dougal has finished running a semester programme at the Isaac Newton Institute on *Groups, Representations and Applications* with co-organisers Martin Liebeck, Britta Späth and Pham Huu Tiep. The programme commenced in 2020, but was interrupted by Covid and the second half was finally run this year. As part of the programme, there were 5 workshops, of which Colva spoke at the first and fifth, and organised the second. Peter Cameron, Saul Freedman and Peiran Wu also participated in the programme, as did St Andrews graduates Scott Harper and Kamilla Rekvényi.

The Newton Institute Programme included a special day meeting in memory of Cambridge group theorist Jan Saxl on 22nd July. Participants from St Andrews included Peter Cameron, Saul Freedman, Veronica Kelsey and Peiran Wu, as well as former St Andrews students Scott Harper, Aluna Rizzoli. Peter gave a talk on ‘Fifty years around Jan: some history and some mathematics’. Curiously, Peter arrived in Britain on 21st August 1968, the day that Soviet tanks rolled into Prague, an event that brought Jan to the UK.



Charles Leedham-Green and Cheryl Praeger (a St Andrews honorary graduate) talking to Peter Cameron at the meeting, as pictured on the front of the INI Bulletin

- On 9 August, Peter Cameron spoke at the *Glasgow-Edinburgh Algebra Research Seminar (GEARS)* at the Bayes Centre in Edinburgh. He gave two talks about ‘Graphs defined on groups’.
- Nik Ruskuc visited Robert Brignall at the Open University from 13-22 July to continue their work on grid classes of permutations.
- Alex Rutar visited Sascha Troscheit (a former St Andrews PhD student) at the University of Vienna from 4-8th July, where he also gave a talk in the *Ergodic Theory Seminar* titled ‘Dimension theory and classification of Assouad spectra through homogeneous Moran sets’.
- Jack Southgate attended the *LMS Hybrid School on Knowledge Exchange in Rigidity, Flexibility and Applications* in Lancaster from 18th-22nd July.

- Alex Stewart gave a talk titled ‘Group reciprocity and the evolution of stereotyping’ in person at the *Mathematical Models in Ecology and Evolution* (MMEE) conference from 18-20th July at the University of Reading. He also gave a virtual talk with the same title at the *Network Inequality* meeting (part of NetSci 2022 in Shanghai).
- From 11th-23rd July, Deborah Kent participated in *MathPath*, a US summer school for students with high interest and ability in mathematics. She gave daily lectures in History of Mathematics, as well as teaching short courses, one week each of Hyperbolic Geometry and Game Theory. Whilst in America, she also made research visits at the University of Virginia and the University of Illinois at Urbana Champaign.

Other News

- Alex Stewart and Nichola Raihani (UCL) were awarded £90k by the *Cultural Evolution Society Transformation Fund* for an 18 month project titled ‘Encouraging collective action via the cultural evolution of interdependence’.
- Isobel Falconer completed ascents of all the Munros on 31st July when she reached the summit of Sgurr Fhuaran on the Five Sisters of Kintail ridge. (For the uninitiated, a Munro is a Scottish mountain at least 3,000ft high, there being 282 of them, and the aim is to climb them all.) There are now 6 Munroists in the School, the others being Clare, Eric, Ineke, Kenneth(x2), and Louise.

Next Issue

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