

# School of Mathematics and Statistics Newsletter

July 2024

## *Congratulations to ...*

- Ian Durbach and Theoni Photopoulou on the birth of Sophia Photopoulou Durbach on 13th June.
- Recently promoted staff in the School: Antonia Wilmot-Smith to Professor, Jean Reinaud to Reader, and Tiago Marques to Principal Research Fellow.
- Mark Chaplain who has been nominated as [President Elect of the London Mathematical Society](#). Whilst he still has to be formally elected, he is expected to take up the office of LMS President in November 2025.
- Daphné Lemasquerier who has been awarded a UKRI *Future Leaders Fellowship* for her project 'Fluid dynamics of deep interiors in the outer solar system'. This prestigious 4-year fellowship gives Daphné time to concentrate solely on her research, a team of a PDRA and 3 PhD students, and funding for some equipment.
- Alex Rutar on successfully defending on 5th July his PhD thesis entitled 'Assouad-type dimensions and the local geometry of fractal sets'.



## *Welcome to ...*

- Danielle Watson who joined our Research Admin Team on 17th June to be our new Senior Research Administrator (Research Centres and Institutes).

## *Farewell to ...*

- Rhona Rodger, who is retiring on 31st July. Rhona has worked in the School for 27 years as a Secretary to CREEM and as Senior Research Administrator, and we wish her a long and happy retirement.
- Hazel Wallace, a Post/Undergraduate Administrator in the School since January 2021, who is moving across the rear car park to become Research Administrator in School of Computer Science.
- Gill Deas, an Undergraduate Administrator with us since January 2022, who is taking up a position in School of Classics as Senior Teaching Administrator.

## *David Pascoe*

- We learnt with sadness of the death in June of David Pascoe. Dave was most recently a Research Fellow in the Solar and Magnetospheric Theory Group from 2021 until this January, where he was working on numerical models of MHD wave heating. Previously he was a postdoc with us from 2008-2013. As well as his many solar contributions, some colleagues knew Dave through lunchtime football and he was part of a winning team in the National Astronomy Meeting's 5-aside competition.

## Visitors

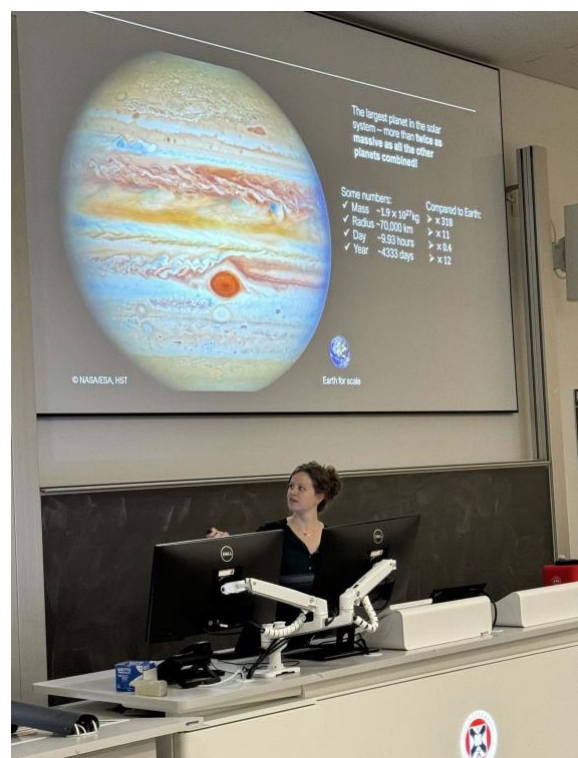
- During June, Sophie Huczynska hosted three visitors for research related to difference sets and cyclotomy. Jim Davis (Richmond) continued his seven week visit, while John Polhill (Commonwealth University of Pennsylvania) visited from 17th-21st June, and Shuxing Li (Delaware) from 24-28th June. Both Jim and Shuxing spoke at the minisymposium on Designs and Algebraic Combinatorics at the British Combinatorial Conference.
- Casey Donoven, a St Andrews PhD student from 2012-17, visited Collin Bleak and Scott Harper for two weeks to work on their project ‘Generating simple vigorous groups’.

## Conferences, Talks and Visits

- Several members of the School attended the *British Mathematical Colloquium* at the University of Manchester from 17-20th June. In the Algebra workshop, Scott Harper gave an invited talk on ‘How big can a minimal generating set be?’ and Rosemary Bailey contributed a talk on ‘Latin squares in higher dimensions’. In the Ergodic Theory workshop, Mike Todd gave an invited talk on ‘Limit theorems for dynamics with heavy tails and clustering’ and Boyuan Zhao contributed a talk on ‘Countable Markov shifts with exponential mixing’; Saeed Shaabani also attended. In the Semigroups workshop, Peter Cameron and Nik Ruskuc gave invited talks on ‘Complete mappings of semigroups’ and ‘Free projection-generated regular  $*$ -semigroups’, and Jung Won Cho a contributed talk on ‘Free inverse semigroups and their substructures’ and Reinis Cirpons also contributed a talk. The Colloquium was followed by several satellite meetings, including the *North British Semigroups and Applications Network (NBSAN)* at which Matthew Brookes gave a talk on ‘Congruences on direct products of simple semigroups’.
- Rosemary Bailey, Peter Cameron, Sophie Huczynska and Victoria Ironmonger attended the *30th British Combinatorial Conference* at Queen Mary University of London, from 1st-5th July. Sophie organised a minisymposium on Designs and Algebraic Combinatorics, and also presented a talk ‘Disjoint and external partial difference families’; Rosemary spoke on ‘Balanced colourings and equitable partitions of triangular association schemes’; Peter described ‘A new look at theorems of Cauchy and Cayley’, and chaired the problem session; and Victoria spoke on ‘Well quasi-order for combinatorial structures under consecutive orders’. Peter retired from the British Combinatorial Committee after 32 years continuous service and Sophie was elected a member of the Committee.
- Rosemary Bailey and Peter Cameron were keynote speakers at the *7th International Conference on Mathematics and Statistics* in Amarante, Portugal, 23rd-25th June. Rosemary spoke on ‘Designs on strongly-regular graphs’ and Peter on ‘The ADE affair’. They then had a brief visit to the Universidade da Beira Interior in Covilhã, Portugal, where they began a new project on equitable partitions, commutative orthogonal block structures, and equivalent estimation, with Dário and Sandra Ferreira and Célia Nunes. They were pleased to discover their books in the library!
- On 6th July, Peter Cameron gave an on-line talk to the *Kerala Mathematical Association* on ‘The ADE affair’.



- Coen Del Valle, Scott Harper, Steve Linton, Jiaping Lu, Colva Roney-Dougal, Rick Thomas, and Peiran Wu attended the conference *New Perspectives in Computational Group Theory* at the University of Warwick from 24-26th June, celebrating the 75th birthday of Derek Holt. Coen, Jiaping and Peiran presented posters and Colva gave the closing talk. Recent PhD students Marina Agnastopolou-Merikou (now at the University of Bristol) and Kamilla Rekvényi (at Imperial College London) also presented posters. Colva stayed on in Warwick to work with Gareth Tracey, and then the fearsome foursome of Colva, Coen, Jiaping and Peiran met up again to attend the *Postgraduate Group Theory Conference* in Birmingham from July 9-12th, where Colva, Jiaping and Peiran gave talks.
- Jung Won Cho (Cho) contributed a talk on ‘Substructures of the monogenic free inverse semigroup’ at the *Conference on Theoretical and Computational Algebra 2024* at the University of Aveiro in Portugal from 30th June-5th July. This conference celebrated the contributions of John Meakin.
- Kenneth Falconer, Natalia Jurga, Ana de Orellana and Alex Rutar attended the *Geometry and Fractals Under the Midnight Sun* conference at the University of Oulu in northern Finland from 25-28th June. Ana and Alex gave lightning talks and Ana was runner up in the competition. And yes, the sun was above the horizon at midnight!
- Mike Todd gave an invited talk on ‘Exponential mixing in a non-compact space’ in the Dynamical Systems Session at the *International Congress of Mathematical Physics* from 1st-6th July in Strasbourg.
- John O’Connor attended the *13th History of Mathematics and Teaching in Mathematics* conference in Miskolc, Hungary from 5-8th June. He gave a talk on ‘Some glimpses of 19th Century Scottish university life’. [These conferences](#) have been held every two years since 2000 and St Andrews mathematicians have spoken at all of them from 2004 onwards.
- Mark Chaplain and Fiona Macfarlane attended the *Society for Mathematical Biology Annual Meeting* held jointly with the *Korean Society for Mathematical Biology* at Konkuk University in Seoul from the 1st-5th July. Both Fiona and Mark gave research presentations and Fiona organised a mini-symposium session on collective cell migration.
- From 25-28th June, Cosima Breu, Harry Callingham, Ineke De Moortel, Daniel Johnson and Alex Russell attended the *11th Coronal Loops Workshop* in La Laguna, Tenerife, and gave presentations.
- On 8th July, Cosima Breu gave an outreach talk on coronal heating for the online talkshow *Astro&Co* organised by the outreach centre *Haus der Astronomie* in Heidelberg, Germany.
- Daphné Lemasquerier, David Rees Jones and Dan Lucas of the Vortex Dynamics group attended the *10th Bifurcations and Instabilities in Fluid Dynamics* conference in Edinburgh, 24-28th June. David and Dan gave talks on their latest results and Daphné gave an invited open colloquium talk on ‘Fluid Dynamics of the Outer Solar System: from Gas Giants to Icy Satellites’. Daphné complained that giving her talk gave her torticollis for three days as a result of turning her head to the screen! [For the uninitiated, torticollis (torticolis in French) = a stiff neck.]



- Thomas Neukirch visited the *Universitat de les Illes Balears* in Palma de Mallorca from 24-30th June to continue his collaboration with Jaume Terradas on MHD equilibria.
- Several of the Solar and Magnetospheric Theory Group are attending this year's *National Astronomy Meeting* (NAM) at the University of Hull from 15-19th July. Cosima Breu, Harry Callingham, Jordi De Jonghe, Daniel Johnson, Jonah Klowss, Anmol Kumar, Kate Mowbray, Lilli Maria Nadol and Jack Reid all presented talks and Sophie Boswell and Thomas Neukirch presented posters. Cosima, Daniel, Jack and Jordi co-organised one of the parallel sessions. Highlights included a public talk by Helen Sharman, the first Briton in space, the famous five-a-side football tournament, from which the St Andrews team has retired after repeated past success, and a quiz in which St Andrews entered a team.
- Tom Elsdon attended the *European Physical Society 50th Conference on Plasma Physics* in Salamanca, Spain, 8-12th July and gave an invited talk on 'Ultra-low Frequency Waves in Earth's Magnetosphere'. Unfortunately, 90% of the conference were only interested in fusion plasmas, but it proved a worthwhile visit to collaborate with a previous PhD student of the School, Oliver Allanson. Salamanca is a stunning city which boasts a university about 200 years older than ours!
- At the start of July, a group from CREEM spent a week with collaborators from the Universities of Auckland and Glasgow, and DFO Canada, at a research retreat near Gairloch on the west coast of Scotland, working on spatial capture-recapture methods. This was very enjoyable and productive, despite the weather, and with a different pair of participants arranging and cooking each evening meal, we were treated to Michelin star quality food every night – leading to a recipe book being in the works!
- Danielle Harris from CREEM attended the *SeaBASS Bioacoustics Summer School* at the University of New Hampshire from 24-28th June, where she presented a session on density estimation using acoustic data.
- At the start of June several members of CREEM and colleagues from SMRU, attended the *Detection, Classification, Localisation and Density Estimation* (DCLDE) workshop in Rotterdam. Danielle Harris, Tiago Marques, Len Thomas and Felix Petersma led a full day workshop on 'The DE part: marine mammal density estimation from passive acoustic monitoring data'. Later in the week Danielle gave a talk on 'Adapting distance sampling to account for non-ranging instruments', Felix presented 'Using acoustic spatial capture recapture to estimate call density of Bowhead whales when many detections are false positives' and Tiago spoke about 'ACCURATE passive acoustic monitoring density estimation: are we there yet?'. Len and Hannah Worthington contributed posters and associated speed talks; Len's focussed on the workshop dataset, 'Right whale call density estimates from the workshop dataset via spatial capture-recapture', whilst Hannah presented the work of her StARIS student, Carla Biermann, on 'A transfer learning approach for unsupervised whistle categorisation'.

### ***Next Issue***

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