

MATHEMATICS AND STATISTICS

NEWSLETTER

June-August 2004

WELCOME

- Welcome to Martial Hille who has come from Goettingen to join the Analysis Group as a PhD student to work with Bernd Stratmann.
 - We welcome Dr Ersin Ozugurlu from Turkey who has just joined the Vortex Group as a Research Fellow. Ersin will be funded by the UK EPSRC for the next 2 years and will be working on geophysical vortex interactions.
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FAREWELL & GOOD LUCK

- Tibor Toeroek, who has been a visiting the Solar Theory Group within the framework of the PLATON Research Training Network since May 2003, has left at the end of July to take up a PostDoc position at Mullard Space Science Laboratories. During his stay in St. Andrews, Tibor did a lot of work on MHD models of solar eruptions (together with Bernhard Kliem, another visitor we had over the past months and partially with Thomas Neukirch). Tibor also finished his thesis which he has now submitted to the University of Potsdam, Germany. We wish Tibor all the best for his future (he'll actually be back for SOHO 15 !).
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CONGRATULATIONS

- Professor Richard A. Harrison, an Honorary Professor in the School of Mathematics and Statistics and a member of the Solar Theory Group, gained an MBE in the Queen's Birthday Honours for services to Solar Research. Richard is based at the Rutherford Appleton Laboratory (RAL) in

Oxfordshire, and has been associated with the Solar Group in St Andrews for many years. He is the Principal Investigator for one of the instruments on the highly successful SoHO space mission.

- The journal 'Fractals' recently published a league table of the most cited authors in the literature on fractals. Kenneth Falconer was 3rd in list, after Benoit Mandelbrot (inevitably) and Per Bak (of self-organised criticality fame). The only other mathematician in the top twenty was Andrey Kolmogorov with the rest all physicists.
- Antonia Wilmot-Smith shared the Faculty of Science Miller Prize with one other graduate. She will start a PhD with the Solar Group. Lauren Rodgers was awarded a prize by the Royal Statistical Society for her final year project and will start a PhD in medical statistics in Newcastle.
- Congratulations to Alexandra Cran on her recent marriage to Simon McGreehin (a Physics PhD student here).
- Congratulations to Sophie Huczynska on gaining a Royal Society Dorothy Hodgkin Fellowship (tenable for 4 years) and Ineke De Moortel on being awarded a Royal Society University Research Fellowship (tenable for 5 years in the first instance). Both of these distinguished Fellowships are extremely difficult to achieve with scientists from all disciplines competing for them. Ineke and Sophie are the first in mathematics here in St Andrews to be awarded such prestigious awards.
- Congratulations to Tom Blyth. In association with HMS BLYTH, a Sandown class minehunter, the Admiralty is to rename a sea cadet training ship the TS BLYTH. First a Bank, now a boat ...

SEMINARS, LECTURES, RESEARCH VISITS

- Colin Campbell and George Phillips attended the Eleventh International Conference on Fibonacci Numbers and their Applications which was held at the Technical University Carolo-Wilhelmina, Braunschweig, Germany from 5 - 9 July. Colin presented a paper (co-authored with Peter Campbell) 'The Fibonacci lengths of binary polyhedral groups and related groups' and George presented a paper 'Index-doubling in sequences by Aitken acceleration'. George's books "Two Millennia of Mathematics: From Archimedes

to Gauss" (2000) and "Interpolation and Approximation by Polynomials" (2003) were included in a conference display of books in the Canadian Mathematical Society series.

- Freda and David Kemp were invited speakers at the Fourth International Summer Conference on Probability and Statistics at McMaster University, Hamilton, Ontario. Freda spoke on "Weighted Distributions for Parametric Regression" and David on "q-Distributions Related to the Logarithmic Distribution". They also attended the annual Joint Statistical Meetings organized by the American Statistical Association in Toronto. Earlier in the year they were invited speakers at the 2nd International Workshop on Applied Probability, held at the University of Pireaus, Greece. Freda gave a paper on "Aging Often Leads to Deterioration: Increasing and Bath-tub Failure Rates for Discrete Data". David gave a paper on "Distributions Related to the Logarithmic Distribution".
- Collaboration with Danish theoretical statisticians continues: Pia Larsen (Odense) came for a week to work with Peter Jupp on the asymptotics of score tests; then Peter spent a week in Aarhus working with Ole Barndorff-Nielsen and Richard Gill (Utrecht) on quantum statistics.
- Ken Newman attended the International Biometrics Conference in July held in Cairns, Australia and gave a talk on modelling animal population trends using hidden process models. He also attended the Joint Statistical Meetings in August in Toronto and gave a talk on incorporating movement in models for animal populations in a session titled "Where the Wild Things Are".
- Irena Vorgul, Duncan McGregor and Alan Cairns attended the European Physical Society Conference on Plasma Physics, held in London from 28th June-2nd July, and, in various combinations, were involved as co-authors in 6 posters. The following week Duncan and Alan went to Culham to continue their collaboration with workers there and with Dr Abhay Ram of MIT who was visiting at the same time. From 12th-16th July Alan attended a Workshop on Theoretical Plasma Physics at the Abdus Salam International Centre for Theoretical Plasma Physics in Trieste, where he gave an invited talk. The following week he returned to Culham to lecture at the Culham Summer School on Plasma Physics.
- On 1-2 July, Alex Craik attended a meeting on the "Fascination of Fluid Mechanics" at Bristol University. This marked Prof. Howell Peregrine's

40 years in Applied Mathematics at Bristol, and 25 years as one of the editorial team of the Journal of Fluid mechanics. He and Alex were exact contemporaries as graduate students in Cambridge.

- Sophie Huczynska and Murray Elder attended the Second International Conference on Permutation Patterns, Nanaimo, BC (Canada), July 2004, where Sophie gave a talk entitled "Pattern classes of permutations via bijections between infinite linearly ordered sets". Sophie is on the organizing committee for the next Permutation Patterns conference, to be held in Florida in March 2005.
- Jean Reinaud attended the 21st International Congress of Theoretical and Applied Mechanics in Warsaw where he presented a poster about strong quasi-geostrophic vortex interactions.
- Paul Wood, Paolo Giuliani and Thomas Neukirch attended the CESRA Workshop 2004 on 'The high energy solar corona: waves, eruptions, particles'. The workshop was held at Sabhal Mor Ostaig on the Isle of Skye from 7 to 11 June 2004. CESRA stands for 'Community of European Solar Radio Astronomers' and one participant (actually a magnetospheric physicist) asked whether it is a rule that CESRA meetings are only held in places where the sun cannot be seen in visible light. The St. Andrews participants presented two posters ('Electron acceleration in reconnecting current sheets' by P. Wood and T. Neukirch and 'Particle acceleration in a time-dependent kinematic model of collapsing traps' by P. Giuliani, P. Wood and T. Neukirch) and participated in the Working Group on 'Particle acceleration mechanisms' in which both Paul Wood and Thomas Neukirch gave brief talks. The discussions during the meeting were very lively (the same magnetospheric physicist commented that he had not expected that such a small scientific community could have so many controversies) and especially the role of small-scale vs. large-scale coronal current sheets for particle acceleration was discussed in detail.
- Thomas Neukirch visited the Kiepenheuer-Institut fuer Sonnenphysik in Freiburg, Germany from 21 to 23 June 2004. Apart from many interesting scientific discussions, he also gave a talk on 'Build-up of strong currents in simple magnetic fields'.
- The formal existence of the PLATON Research Training Network ended on 31 July 2004, and the network held its Final Meeting on 24 and 25

June 2004 in Strasbourg, France. The meeting had the aim of reviewing the work undertaken by the PLATON network during the four years of its existence, and to highlight directions for future research. Participants from St. Andrews were Thomas Neukirch (PLATON Coordinator), Ineke De Moortel, Francois Bocquet, Tibor Toeroek and Gunnar Hornig. Ineke gave an invited talk on 'Coronal heating' and Francois, Tibo and Gunnar gave contributed talks. Thomas gave a talk in which he summarized the network's status at the end of its four years. Despite the formal end of PLATON, Thomas is still busy with the bureaucratic aftermath (final report, financial reports etc) and this will probably continue within the foreseeable future (it isn't over until the fat lady sings ...).

- On 18 August 2004 Thomas Neukirch visited the Fusion Theory Group of the UKAEA, Culham, and gave a talk on 'Build-up of strong currents in simple magnetic fields'.
- Eric Priest lectured at PPARC's summer school in Glasgow for new research students in solar and magnetospheric science, attended by our own new students, Andrew Haynes, Michelle Murray and Antonia Wilmot-Smith.

- Eric Priest, Gunnar Hornig, Thomas Neukirch, David Pontin and Rhona Maclean spent the month of August at the Isaac Newton Institute for Mathematical Sciences in Cambridge on a Programme called "MHD Reconnection Theory" organised by Eric. After some review and tutorial talks, the month was spent in brainstorming and sharing ideas between the 40 participants, who were a mixture of solar and magnetospheric, MHD and collisionless theorists. It was a really stimulating time, with many new ideas and new collaborations, which we expect to come to fruition over the next year. It was also fun to dine in Trinity and to test our ideas of angular momentum and collisions while punting. David gave a talk on 'Kinematic 3D reconnection at nulls' and Rhona's talk was called 'Topology of magnetic breakout'.
 - Clare Parnell, Paul Wood and James McLaughlin also joined the reconnection workshop in Cambridge for a two day meeting. Clare gave a talk on 'Reconnection and Coronal Heating whilst James' talk was on 'MHD wave propagation in the neighbourhood of a 2D null point'.
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NEXT ISSUE

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