

MATHEMATICS AND STATISTICS NEWSLETTER

Summer 2012

CONGRATULATIONS

- Congratulations to Roland and Andrea Langrock on the birth of their second son, Hendrik who was born on 20th July, weighing in at 5lb 2oz and measuring 47cm.
 - Congratulations to Michael and Drahomira Papathomas on the birth of their daughter Stella, who was born on 11th August.
 - Congratulations to Jay McPhee, who passed her PhD viva on 6th September. Her thesis title was 'Endomorphisms of Fraïssé Limits and Automorphism Groups of Algebraically Closed Relational Structures'.
 - Congratulations to Alan Cairns who is a co-investigator on an EPSRC Critical Mass grant recently awarded to Prof. Dino Jaroszynski of the University of Strathclyde. This grant of £3.9M is for a project entitled 'Collective radiation-beam-plasma interactions at high intensities'.
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WELCOMES & GOODBYES

- Welcome to Antony Overstall who started as a Lecturer in Statistics on 1st October.
 - Welcome to the new research students Casey Donovan from Montana State University, and Vuksan Mijovic from University of Belgrade in Serbia who both joined the Analysis Group as PhD students in September (although due to VISA problems Vuksan has only just arrived). Some staff members may remember Vuksan from summer 2010 when he visited St Andrews for 6 weeks as an IAESTE undergraduate summer research student. Welcome also to Julius Jonusas, Tom Elsdon, Jonathan Hodgson, Eon Lee and Jennifer O'Hara all recent St Andrews graduates. Julius joins the Algebra and Combinatorics group, while all the rest join the Solar group as new PhD students. Finally welcome also to the two new Statistics PhD students Ben Stevenson, who comes from the University of Auckland, New Zealand, and Rocio Prieto Gonzalez who joins us from the University of Valladolid, Spain.
 - Welcome to Rikke Ingebrigtsen who visits CREEM for six months. Rikke is a PhD student from Trondheim, Norway, jointly supervised by Haavard Rue, Ingelin Steinsland and Janine.
 - Goodbye to Paul Wilson who leaves us to take up a lectureship at the University of Wolverhampton.
 - Goodbye to Grant Hopcraft who was working with Ruth King and Len Thomas on modelling animal movement data. Grant will start a fellowship at the University of Glasgow from 1st November.
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SEMINARS, LECTURES & CONFERENCE TALKS

- A number of members of the Solar Group recently attended the BUKS2012 conference, held in Crete. The warm (above 30°C) sunshine in Fodele Beach Resort was much appreciated by the conference! The meeting was dedicated to a celebration of the 65th birthday of Professor Marcel Goossens, the founding director of the Centre for Plasma Astrophysics, Katholieke Universiteit Leuven (Belgium). The opening lecture entitled ‘Comments on selected papers of M Goossens’ was given by Bernard Roberts and Prof Goossens gave a keynote address ‘Plasma astrophysics by chance and vision’. BUKS is a grouping of research groups from universities in Belgium (Leuven), UK (St Andrews, Sheffield, Warwick, Belfast) and Spain (Palma, Tenerife) with the aim of studying waves (mainly MHD) in the Sun's atmosphere. BUKS meetings attract an international attendance. Ineke De Moortel was on the Scientific Organising Committee of BUKS2012, which was chaired by Prof M Mathioudakis, Queens University Belfast. Talks at the meeting included ‘Hall MHD waves and their interaction with 2D magnetic X-points’ by James Threlfall, ‘3D numerical simulations of coronal loop oscillations’ by Ineke De Moortel, ‘Spatial damping of propagating kink waves’ by David Pascoe, and ‘Propagating disturbances in coronal loops: a detailed analysis of propagation speeds’ by Greg Kiddie. Ineke De Moortel also chaired a session and gave a session summary talk as well as chairing the ending debate on the topic ‘The future of BUKS - the way forward’.
- Ruth King attended the SMSTC symposium at Perth in her role as Statistics Stream leader along with the new 1st year PhD students.
- In May, Ruth King was an invited speaker at the ‘Population Modelling and Epidemiology Group Research Day’ in Glasgow, hosted by the University of Strathclyde.
- Janine Illian was a keynote speaker at the 2nd Workshop on Bayesian Inference for Latent Gaussian Models, Trondheim and gave a seminar talk at the Norwegian Institute for Nature Research (NINA) in May/June. She gave an invited talk entitled ‘Complex Spatial and Spatio-Temporal Point Process Modeling with Applications in Ecology’ at the XXVIth International Biometric Conference, Kobe, Japan in August.
- Alexander Konovalov attended the ‘Workshop on Group rings and related topics’ on 25th - 29th June 2012 in the University of Stuttgart and gave a talk ‘Prime graphs of normalised unit groups of integral group rings of sporadic simple groups’.
- Irena Vorgul presented a poster at the European Physical Society Conference on Plasma Physics held in Stockholm in July, with Alan Cairns as a co-author. Irena and Alan were co-authors on a further six papers.
- The ISEC2012 (International Statistical Ecology Conference) was held on 3rd - 6th July 2012 in Sundvollen Norway. Over 225 participants from 35 countries participated in this third ISEC, sponsored by the National Centre for Statistical Ecology. St Andrews staff members (Stephen Buckland and Eric Rexstad) served on the scientific programme committee, and Len Thomas was one of the plenary speakers. A large St Andrews contingent presented talks and posters (15 presenters) along with a number of CREEM ‘alumni’ (Rachel Fewster, Leslie New to name just two) were in attendance. Hannah Worthington earned one of the awards for best student presentation. A wonderful time was had by all, and a tip of the hat to our Norwegian hosts for providing a perfect conference venue and outstanding weather. Plans are already underway for ISEC2014 to be held in Montpellier in July 2014.

- Tara Brough attended the ICMS workshop on ‘Cubical complexes and applications’, held from 16th-20th July, and gave a talk on ‘Automaton semigroup free products’ at the NB-SAN meeting in Edinburgh held on the 23rd of July.
 - Over the Summer Clare Parnell gave a number of invited reviews at meetings including one on ‘3D Magnetic Reconnection’ at the EWASS 2012 in Rome at the start of July and one entitled ‘Distribution of surface magnetic flux and its evolution’ at Hinode 6 which was held in St Andrews in August.
 - Charles Paxton gave a talk during the Edinburgh Festival Fringe in August entitled ‘The Vital Statistics of the Loch Ness Monster’. The talk was part of a series organised by the Scottish humanists/Edinburgh skeptics.
 - Nik Ruskuc and Tara Brough both attended the ‘Semigroups and applications’ conference held in Uppsala, from 30th August - 1st September. Nik gave an invited lecture and Tara gave a talk on ‘Green’s relations on semigroups with rational word problem’.
 - Vasilis Archontis lectured at the ‘STFC advanced summer school in solar physics’, held at the University of Warwick, from 2nd-7th September. The topic of his lecture was ‘Solar Atmosphere: Structure and Dynamics’
 - Sophie Huczynska was an Invited Speaker at the ‘RICAM-Workshop on Finite Fields and Their Applications: Character Sums and Polynomials’, held in Austria from 2nd-7th September. Her talk was entitled: ‘Existence results for polynomials with specified properties’. The conference was held at an Institute in a very picturesque setting in the Austrian lakes.
 - Michael Papathomas gave a talk at the recent Royal Statistical Society conference (3rd-6th September in Telford) with the title ‘Using Dirichlet process partitioning models to assist linear model determination: application to graphical log-linear models’.
 - On Saturday 8th September Alan Hood gave a public lecture to the British Astronomical Association as part of the British Science Festival. This is a major week long science festival featuring such famous names as Brian Cox, Iain Stewart, Bill Bryson and many others. (It also featured some unknown solar theorist.)
 - Alex Craik attended the conference ‘Nonlinear Waves in Fluids’ at Loughborough University during September 12th-13th. The meeting was held to mark the retirement of Professor Roger Grimshaw.
 - Alan Hood gave two 90 minute lectures at the Advanced STFC Summer School at Armagh Observatory on 17th September. The lectures were on ‘An Introduction to MHD’ and ‘Magnetic Reconnection’.
 - Ineke De Moortel gave a talk on ‘Energy Flow and the Role of Waves in the Solar Atmosphere’ at the recent ISSI meeting on Helioseismology in Bern (24th-28th September).
 - Charles Paxton contributed to the ‘Fishy Figures’ event held by the Royal Statistical Society at the British Science Festival in Aberdeen in September.
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RESEARCH VISITS & VISITORS

- Jean Reinaud visited The Laboratoire de Physique des Océans at the Université de Bretagne Occidentale, Brest France, from 23rd June - 15th July. He worked with Professor Xavier Carton on the interaction between two hetons. These are self-propagating structures observed in the oceans consisting of two vortices of different sign lying at different depths.
- In July Nik Ruskuc visited Robert Gray (a former PhD student and graduate of St Andrews) in Lisbon. He also visited Robert Brignall (former PhD student, now at the Open University) in early October.
- Nik Ruskuc has had various research visitors across the summer period. Firstly in June he was host to Alan Cain (a former PhD student and postdoc; now in Porto). Then later during the summer hosted Vincent Vatter (Florida, Gainesville; former St Andrews postdoc) and Michael Albert (University of Otago, Dunedin, New Zealand). Finally in September hosting Igor Dolinka (from Novi Sad, Serbia).
- Clare Parnell visited the Issac Newton Institute for 6 weeks from the end of August as part of the Programme on ‘Topological Dynamics in the Physical and Biological Sciences’. During her stay she gave a seminar entitled ‘On the Topology of Complex Magnetic Fields on the Sun and in the Magnetosphere’. She also attended a meeting in Paris on ‘Reconnexion Magnétique’ from 25th -27th September and gave a talk on ‘Separators and Separator Reconnection’.
- Collin Bleak welcomed Jose Burillo as a research visitor for a week in late August.
- Collin then visited Cornell University from 6th -16th September (to collaborate with Professor Martin Kassabov). During this visit he gave two lectures one at Cornell University and one at Binghamton University both entitled ‘On small presentations for the higher-dimensional BrinThompson groups nV ’.
- In September Janine visited Rosa Cujeiras at the University of Santiago de Compostela, Spain, and gave a talk entitled ‘Modelling spatial point patterns of realistic complexity’ at the International Workshop on Spatio-Temporal Modelling (METMAVI) in Guimarães, Portugal.

WORKSHOPS, SUMMER SCHOOLS & EVENTS ORGANISED

- Ruth King, Len Thomas, Roland Langrock and Grant Hopcraft organised a workshop on ‘Statistical Advances in Modelling Animal Movement Data’ from 25th -28th June at CREEM, for which funding had been obtained via the EPSRC Strategic Partnership Fund. A total of 20 participants attended the workshop, including statisticians, mathematicians and ecologists, from countries including Australia, Finland, South Africa, Argentina and Denmark.
- From 12th -18th August, the 6th Hinode Meeting took place in St Andrews, with about 150 delegates gathering to present and discuss the latest Hinode observations. The LOC of the meeting consisted of Ineke De Moortel (Chair), Fiona MacFarlane, David Pascoe, James Threlfall, Greg Kiddie and Solmaz Eradat Oskoui. Alan Hood chaired the SOC.

- Janine Illian co-organised and attended a 1-day meeting in London on 24th September on ‘Integrated Population Modelling’, a joint meeting between the International Biometrics Society, Royal Statistical Society and British Ecological Society. Ruth King and Hannah Worthington also attended the meeting, with Hannah presenting a poster.
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OTHER NEWS

- Other activities Alan Hood has been engaged in since the last newsletter are that he is Undergraduate Applied Mathematics external examiner for Glasgow University, and a PhD examiner for a thesis at Exeter University. He was selected for the STFC Solar System Advisory Panel, as UK Science Representative on the Hinode Science Group (Hinode is a Japanese space mission) and finally as a non-core member of STFC Science Board (one of the top committees in STFC). In addition he acted as chair of SOC for the Hinode 6 conference held in St Andrews in August 2012.
- Janine Illian was external examiner two PhD theses in June, David Bolin’s thesis entitled ‘Models and Methods for Random Fields in Spatial Statistics with Computational Efficiency from Markov Properties’ in Lund, Sweden, and Arnab Bhattacharya’s thesis entitled ‘Fast Sequential Parameter Inference for Dynamic State Space Models’ in Dublin. Janine also served on the International Advisory Board at the 7th International Conference on Stereology, Spatial Statistics and Stochastic Geometry, Prague 2012 in July.
- Ruth King was invited to be an associate editor for the Journal of Agricultural, Biological, and Environmental Statistics and will act in this capacity from 1st August 2012-31st July 2015 (Ruth has previously held this position for this journal from 2005-10).
- Duncan Mackay has been appointed as a Co-I for the international space mission of Solar Orbiter which will launch a satellite towards the Sun. Duties will include defining mission goals and selection of science programs. He has also been appointed as an Associate Editor to the Journal of Geophysical Research: Space Physics. Duncan is also currently acting as Honours Applied Mathematics External Examiner at Herriot-Watt University.
- Congratulations to Eric Priest on having completed climbing all the Munros (Scottish hills over 3000ft high, of which there are 282) with Ben Klibreck in Caithness as his final peak. He is the fourth member of the School to become a ‘Munroist’ (the others being Clare, Ineke and Kenneth(x2)).

NEXT ISSUE

Please send material for the next Newsletter to: mcsupdate@mcs.st-andrews.ac.uk