

MATHEMATICS AND STATISTICS NEWSLETTER

Autumn 2013

WELCOMES & GOODBYES

- Welcome to Valentin Popov who joined in September as a teaching fellow in Statistics.
- Welcome to our new PhD students. Charlotte Jones-Todd and Ben Erichson in Statistical Ecology; Serveh Sharifi Far in Statistical Inference; Cristina Evans in Fluids; Oliver Allanson and Zoe Sturrock in Solar; Sascha Troscheit in Analysis; Daniel Bennett, Ewa Bieniecka (started in January), Thomas Bourne, Alexandros Efthymiadis and Artur Schaefer (started in April) in Algebra and Combinatorics.
- Farewell to Sue Liu, and Yue-Kin Tsang, both of whom have left the fluids group to take up postdoc positions in the University of Edinburgh.
- The fluids group welcomes Greg King who is visiting the group for the next six months to a year to collaborate on his interests in the analysis of near sea-surface wind vector data.
- Welcome to Kathryn Hare from the University of Waterloo in Canada who is visiting Kenneth Falconer and Lars Olsen for the academic year, and to Malte Koch from Bremen who is visiting the analysis group this semester.
- Farewell to Xiong Jin who has left St Andrews to take up a lectureship in probability at the University of Manchester.

CONGRATULATIONS

- Congratulations to Valentin Popov who successfully defended his PhD thesis in October.
- Congratulations to Magda and Gary on the birth of their daughter Skye, born on the 31st of July and weighing in at 8lb 6oz.
- Congratulations to Bruno and Liliana on the birth of their baby Gabriel Dinis Martins e Caneco, born on the 10th of March and weighing in at 7lb 3oz.
- Congratulations to Marjolaine Caillat, who defended her PhD thesis (in Biology) on ‘Assessing and correcting for the effects of species misclassification during passive acoustic surveys of cetaceans’, co-supervised by Len Thomas.
- Congratulations to Hanna Plotka who successfully defended her PhD thesis entitled ‘The structure, stability and interaction of geophysical vortices’. Hanna has taken up a postdoc position in Swiss Federal Institute of Technology, Zurich.
- Congratulations to Jonathan Fraser who successfully defended his PhD thesis entitled ‘Dimension theory and fractal constructions based on self-affine carpets’ in June. Jonathan now has a 3 year postdoc position at Warwick University.

- Congratulations to Zoe Sturrock on making the short list for the ‘European Science, Engineering & Technology Student of the Year’ in the ‘Best Mathematics Student’ category. Zoe made the short list of just 3 from 500 nominations for her senior honours project on ‘3D Magnetic Reconnection’. She was judged during an interview in London along with the two other candidates and narrowly missed out to William Perry from the University of Oxford. The awards were announced at a glitzy dinner in London which Zoe attended.
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GRANTS & PRIZES

- Roland Langrock received the ‘Reinsurance Group of America Prize awarded by the Actuarial Society of South Africa for the best published research in 2011’ awarded by the Actuarial Society of South Africa (approximately £1500, to be split among three authors).
- David Borchers, together with CIs Janine Illian and Steve Buckland at St Andrews and Finn Lindgren from Bath, was awarded an EPSRC grant of £550,000 (of which £320,000 comes to St Andrews). The project will develop statistical methods for modelling the spatial structure of wild animal populations and how these are affected by environmental change. This is important for assessing biodiversity and the impact of climate change. The problem is challenging because survey data are typically sparse, and there is unknown random error in the observation process (animals go undetected by chance) as well as in the underlying spatial processes.
- David Borchers was awarded an EPSRC Impact Acceleration grant of £19,000 to develop methods for estimating marine mammal and seabird density from high-definition digital video survey data, in collaboration with Dr Andy Webb of HiDef Aerial Surveying Limited and Peter Nightingale in the School of Computer Science. The project uses Constraint Programming research in the School of Computer Science to make estimation feasible. Without the algorithms from this research, the computation of estimates would take too long to be practically useful.

SEMINARS, LECTURES & CONFERENCE TALKS

- Ineke De Moortel gave an invited review on ‘Theory and Modelling of Coronal Wave Heating’ at the LOOPS VI workshop in Belgium (25th -27th June). She also gave a talk at this year’s MHD Meeting (Glasgow, 23rd -24th May) on ‘Wave Damping due to Mode Coupling in Solar Coronal Loops’.
- David Borchers gave an invited talk to the Channel Network Meeting of the International Biometric Society in St Andrews in July, entitled ‘Discrete- and Continuous-time Models for Line Transect and Capture-Recapture Surveys’. He also gave an invited talk at the annual research day of the Strathclyde Population Modelling and Epidemiology group in June.
- Ben Stevenson gave an invited talk at the Royal Statistical Society 2013 International Conference held at Northumbria University, Newcastle, in September. The invitation was by virtue of winning third prize for best talk at the Research Students’ Conference in Probability, Statistics, and Social statistics, held at Lancaster University in March. His talk was entitled ‘Spatially explicit capture-recapture with imperfect information on animal location’.

- In July Ben Stevenson gave a seminar at the University of Cape Town, entitled ‘Estimating population density of *Arthroleptella lightfooti* using spatially explicit capture-recapture methods’.
- In the spring Richard Scott gave invited talks at conferences in Princeton and Bern; over the summer he gave talks at conferences in Rhone Island and Lyon, and an invited talk at a conference in Davos. He also spent a month on a research visit in Seattle.
- Sophie Huczynska attended the 24th British Combinatorial Conference at Royal Holloway in early July, and was re-elected as a member of the British Combinatorial Committee.
- Sophie Huczynska was a Plenary Speaker at Fq11 - the 11th International Conference on Finite Fields and their Applications, which took place in Magdeburg, Germany, in late July.
- David Dritschel attended the MASTS Annual Science Meeting (27th -29th August) in Edinburgh where he opened and presented work at a special session on Numerical Hydrodynamical Modelling. He also presented a talk at a special one-day UK-Japanese meeting at the Isaac Newton Institute in early September organised by Professor Keith Moffatt, another talk at the 3rd Norway-Scotland Waves Symposium (16th -17th September) in Oslo, as well as a talk at GeoTurb: Numerical Modelling and Theoretical Challenges in Atmosphere and Ocean Turbulence (2nd -4th October) in Lyon.
- In March Hannah Worthington attended the Research Students Conference in Lancaster University where she presented a talk. In July she attended the Channel Network Meeting here in St Andrews, presenting both a talk and a poster, and was awarded a prize for her poster. Also in July Hannah attended the NCSE Summer meeting in Lowestoft, presenting a talk.
- Janine Illian was an invited speaker at JdS2013 Toulouse (France), in May; an invited speaker at CNC St Andrews, in July; and a speaker at the NCSE meeting, in July. Janine also gave a seminar at NOAA Seattle, in August; and a talk at the RSS INLA meeting, Edinburgh, in September and presented a poster at the third Workshop on Bayesian Inference for Latent Gaussian Models, Reykjavik, September (funded by Trondheim University).
- Ruth King was an invited speaker at an RSS meeting in Edinburgh in February, she also presented a talk at the NCSE meeting held in Lowestoft in July.
- In March, Antony Overstall attended the Industrial Statistics Day of the Turing Gateway to Mathematics event at the Isaac Newton Institute in Cambridge, presenting a poster entitled ‘Design space production for chemical kinetics models’. In June, he was an invited speaker at the Spring Research Conference on Statistics in Industry and Technology at UCLA where he talked on ‘Optimal Bayesian Design using Gaussian Process Emulators’. Whilst in California, he also attended the Western and North American Region of the International Biometric Society conference and talked on ‘Bayesian Inference for Computationally Expensive Models with Application to the Estimation of Stem Cell Properties’. In July, Antony gave a seminar at the Mathematical Sciences Institute at Australia National University in Canberra, Australia entitled ‘Bayesian Inference for Computationally Expensive Models with Application to the Estimation of Stem Cell Properties’.
- Roland Langrock gave a variety of talks, firstly invited talks entitled ‘Maximum likelihood estimation of general state-space models using hidden Markov-type approximations’, at the Ecological and Environmental Statistical Modelling Symposium, Lisbon, Portugal, in April; ‘Latent-state modelling in ecology’, at the University of Goettingen, in June;

‘Latent-state modelling and applications in ecology’, at LMU Munich, in July; ‘Non-parametric hidden Markov models’, at S.Co.2013, Milano, in September. Additionally he gave several other talks ‘Maximum likelihood estimation of mark-recapture-recovery models in the presence of continuous covariates’, at DAGStat 2013, in Freiburg, in March; ‘Explicitly incorporating stochastic availability processes in surveys of marine mammal abundance’, at the 27th European Cetacean Society Conference, in Setubal, Portugal, in April; ‘Markov-modulated nonhomogeneous Poisson processes for dealing with availability bias in surveys of marine mammal abundance’, at the Channel Network Meeting of the International Biometric Society, in St Andrews, in July; ‘Hidden Markov models with non-parametric state-dependent distributions’, at the NCSE summer meeting, in Lowestoft, in July.

- Martyn Quick gave a talk on ‘Generators and relations for Thompson’s group V’ at Groups in Galway, in May.
- Nik Ruskuc gave an invited lecture titled ‘Free idempotent generated semigroups’, at NSAC2013, Novi Sad, Serbia, in June. Nik also gave talks on ‘Hopfian property for semigroups’, in York, in January; ‘Permutations and Words’, in Strathclyde, in February; and ‘ $1+1=2$ makes direct products interesting’, in Linz, Austria, in March.
- In the first week of July, Kenneth Falconer and Abel Farkas attended a large (700 participant) conference in Budapest to mark the 100th birthday of Paul Erdős, with Kenneth giving an invited talk in the Analysis section.
- Steve Buckland was an invited speaker at the Royal Statistical Society conference in Newcastle in September. The title of his talk was ‘How should regional biodiversity be monitored?’
- Tara Brough gave invited talks titled ‘Poly-context-free groups’, at the University of Neuchâtel, in July; ‘Automaton semigroups’, at the University of Bristol, in June; and ‘Automaton semigroups’, at the University of Auckland, in January. Tara also gave conference talks entitled ‘Anisimov’s Theorem for inverse semigroups’, at Groups St Andrews, in August; ‘Automaton semigroup constructions’, at Novi Sad Algebraic Conference, in June; ‘Free products and wreath products of automaton semigroups’, at Questions, Algorithms and Computations in Abstract Group Theory, TU Braunschweig, in May. She also attended the conferences Women in Mathematics Day, at the Isaac Newton Institute, Cambridge, the Workshop on Semigroup Representations, at the ICMS Edinburgh, and the 14th NBSAN Meeting, at the University of St Andrews.
- In March, Mike Todd was an invited speaker at a workshop ‘Large deviations and thermodynamical formalism’ held as part of a themed semester at the Bernoulli institute in Lausanne. Mike also spoke at an AMS sectional meeting in Boulder, Colorado in April. The session was entitled ‘Dynamical systems: Thermodynamic formalism and connections with geometry’. He was one of the speakers in a one-day meeting at the ICMS for ‘young’ researchers in Scotland entitled the ‘Scottish Partial Differential Equation Colloquium’.
- Many members of CREEM spent quality time in Portugal in April. The first destination was the European Cetacean Society’s annual conference, held in Setubal, Portugal. Len Thomas gave a plenary talk (‘Interdisciplinary approaches in the study of marine mammals: ecology meets statistics’). The second destination was Lisbon, the day after the ECS conference ended, where Tiago Marques had co-organized a one-day symposium on Ecological and Environmental Statistical Modelling. Four talks were given by members of CREEM (Carl Donovan, Roland Langrock, Rob Schick and Len Thomas), and four by Portuguese statisticians.

- Rosemary Bailey attended various conferences this year, firstly ‘Model-Oriented Data Analysis and Optimum Design’, at Lagow Lubuski, Poland, talking on ‘Quasi-Latin designs for experiments in rectangles’; then the ‘Spring Research Conference on Statistics in Industry and Technology’, at UCLA, talking on ‘Using graphs to find optimal block designs’; ‘Channel Network Conference of the International Biometric Society’, at St Andrews, talking on ‘Design and analysis of experiments testing for diversity in ecology’; ‘Combinatorics, Algebra, and More: conference in honour of Peter Cameron’, at QMUL, talking on ‘Incomplete-block designs and Laplacian eigenvalues’; ‘Durham Symposium on Graph Theory and Interactions’, talking on ‘Levi graphs and concurrence graphs as tools to evaluate block designs’; finally attending the Groups St Andrews conference.
- Rosemary Bailey also gave various invited seminars, the Cambridge Statistics seminar in January, speaking on ‘Conflicts between optimality criteria for block designs with low replication’; the Cambridge Algebra seminar, speaking on ‘Association schemes, permutation groups, and their products’; the St Andrews Statistics seminar, on ‘Conflicts between optimality criteria for block designs with low replication’; the QMUL Statistics seminar, on ‘Circular designs balanced for neighbours at distances one and two’; and finally the Poznan University of Life Sciences, Statistics seminar, speaking on ‘Optimal design of experiments with very low average replication’.
- Colva Roney-Dougal, Tara Brough, Markus Pfeiffer and Alexander Konovalov went to Braunschweig to attend the Workshop ‘Questions, Algorithms, and Computations in Abstract Group Theory’ on May 21st-24th, http://www.icm.tu-bs.de/ag_algebra/ws-qac/. Markus spoke on ‘The polyrational hierarchy’, Colva on ‘A new approach to computation in finitely-presented groups’, Alexander spoke on ‘Practical approach to partial augmentations: torsion units in integral group rings of finite groups’ and Tara on ‘Free products and wreath products of automaton semigroups’.
- Peter Cameron has been to eight conferences since March, including the Southeastern Conference on Graph Theory, Combinatorics and Computing, in Boca Raton, Florida (where he saw alligators); the British Combinatorial Conference at Royal Holloway in London; and of course Groups St Andrews. He reports that the highlight was definitely his retirement conference at Queen Mary in July, at which there was a great list of speakers, including Joao Araujo, Laszlo Babai, Peter Neumann, Colva Roney-Dougal, Alan Sokal, Anatoly Vershik and Geoff Whittle. The complete list is on the conference web page at <http://www.maths.qmul.ac.uk/~camconf/> which also includes pictures from the conference walks.
- Colva Roney-Dougal gave the opening lecture on ‘Random elements of finite groups’ at the postgraduate group theory conference that was held in Manchester from 2nd to 4th July, <http://www.maths.manchester.ac.uk/~pgtc/>.

RESEARCH VISITS & VISITORS

- Ineke De Moortel visited the High Altitude Observatory in Boulder, Colorado from 1st - 8th May to work with Dr Scott McIntosh on solar observations. She also visited the Centre for Plasma Astrophysics, Leuven (Belgium) from 5th - 28th June to collaborate with Dr Tom Van Doorselaere and Prof Marcel Goossens.
- Ben Stevenson visited Cape Town, South Africa, for two weeks in July to work with Dr John Measey of Nelson Mandela Metropolitan University and Prof Res Altwegg of the

University of Cape Town, on a National Geographic Society (NGS) grant on which John is PI and David Borchers is CI. The project, which has now finished, involved developing and testing a new method of estimating frog density. It attracted positive feedback from an NGS delegation who visited Cape Town in September, and as a result John, Res, David and Ben are preparing a larger follow-on proposal to use the new method to investigate the effect of climate change on frog abundance and distribution.

- Eric Rexstad paid a research visit to the European Commission Joint Research Centre in Ispra Italy in March to discuss research collaboration and present a talk on distance sampling methods.
- Janine Illian made various research visits, firstly to Haavard Rue's group at NTNU Trondheim (Norway) in January and March (funded by NTNU); to NINA (Norsk institutt for naturforskning) Trondheim (funded by NINA); the National Oceanic and Atmospheric Administration (NOAA) Seattle, in August (funded by International Science Proposal FY13); and lastly to KEMRI Wellcome Trust research, Kilifi, Kenya (funded by Oxford Tropical Network and Trondheim University).
- Brett McClintock, Devin Johnson, Juan Morales and Jason Matthiopoulos visited the statistical ecology group for a week in August and both Devin and Brett presented a seminar.
- In May, Antony Overstall visited Dave Woods at the University of Southampton and gave a talk called 'Optimal Bayesian Design using Gaussian Process Emulators' to their design study group.
- Roland Langrock and Ruth King hosted the ERASMUS student Théo Michelot from INSA de Rouen, France, who visited for three months between June and September.
- Nik Ruskuc made research visits to York, 21st-23rd January; Strathclyde, 14th-15th February; Linz, 23rd-29th March; and Wroclaw, 6th-12th May. Nik also hosted various visitors, firstly Vince Vatter, from Gainesville, Florida, 10th-26th May; Alan Cain, from Porto, 12th-24th May; Robert Gray, from the University of East Anglia, 14th-19th July; and finally Igor Dolinka, 30th August - 7th September.
- Tara Brough made several research visits, firstly to TU Braunschweig, 27th-31st May, working with Bettina Eick; to the University of Neuchâtel, 8th-14th July, working with Laura Ciobanu and Murray Elder; Tara also worked with Alan Cain during the first week of his visit with Nik Ruskuc.
- In Spring, Mike Todd spent three months on a research visit at Boston University where, among other mathematical activities, he also hosted visitors including Mark Demers (Fairfield), Dan Thompson (Ohio State) and Ana Christina and Jorge Freitas (Porto). In May, Mike spent a week visiting the University of Houston to collaborate on a project on statistical laws of Teichmüller flows. In July Mike spent two weeks at the Catholic university (PUC) in Santiago, Chile. The first week was for collaboration while the second was for a meeting 'Thermodynamic Formalism and applications;', where he also spoke. Mike also spent a week in Helsinki in August to work with his collaborator Neil Dobbs there on a project on statistical stability of a class of dynamical systems. Then in September, he visited Porto to examine a thesis and to collaborate with colleagues on a project on Extreme Value Theory in dynamical systems.
- One of the projects within CREEM involves developing analysis methods for experiments designed to determine the effect of Navy sonar on whales and dolphins. This is structured

as a working group, with 6-monthly research meetings hosted by group participants. The April meeting was in Den Haag, hosted by the Netherlands defense research organization TNO, and September meeting was in Beaufort, North Carolina, hosted by Duke Marine Lab. Both meetings were attended by Catriona Harris, Stacy DeRuiter, Dina Sadykova and Len Thomas, and the second was also attended by Monique MacKenzie.

- Len Thomas and Tiago Marques made a research visit to San Diego, California in August to work with John Durban of the Southwest Fisheries Science Centre on a project involving analysis of tag data from deep-diving whales. Len flew on to Seattle for a series of meetings funded by a US government-funded international science development grant. He was hosted by Devin Johnson and Brett McClintock of the Alaska Fisheries Science Centre (Brett used to work here in Maths and Stats).
- Professor Ron Goldman of Rice University, Houston, Texas visited George Phillips in September, on his way to give a talk as an invited speaker at the Mathematics of Surfaces conference in Birmingham, England. Ron has published papers about the q-Bernstein polynomials, which were introduced by George in 1996. He is also interested in the work George did in the 1980s with Dorothy Foster in which they generalised Gauss's Arithmetic-Geometric mean process.
- Rosemary Bailey visited Caius College Cambridge as the G. C. Steward Fellow, in which capacity she gave three talks: first in February 'From Rothamsted to Northwick Park: designing experiments to avoid bias and reduce variance'; in March 'Latin squares'; and in May 'Association schemes'. Rosemary also made research visits to a workshop on neighbour designs at the Banach Centre for Mathematical Sciences at Bedlewo in Poland in May; to University of Life Sciences, Poznan, Poland to continue research with Agnieszka Lacka on nested row-column designs, and research with Katarzyna Filipiak and Augustyn Markiewicz on neighbour designs. During August Rosemary also hosted a research visit from Chris Brien, from the University of South Australia, who visited to continue joint research on multi-tiered experiments.
- Leo Margolis from Stuttgart visited Alexander Konovalov from September 9th to 20th.

WORKSHOPS, SUMMER SCHOOLS & EVENTS ORGANISED

- Andy Wright is leading a team of international scientists in a series of three workshops at the International Space Science Institute in Bern, Switzerland. The programme title is 'Magnetosphere and Ionosphere as a Coupled System: Theory and Observations', and is attended by a hand-picked team of around 8 international experts. The first meeting took place from 20th -25th January, and Andy gave a talk entitled 'Coupling the Magnetosphere to a Distributed Ionosphere with Alfvén Waves'. In August Andy Wright led the second 5 day workshop and gave a talk entitled 'Alfvén Wave Boundary Condition: Coupling the Magnetosphere to a Distributed Ionosphere'.
- The Solar Theory Group, together with the Astronomy Group (Physics & Astronomy) hosted the annual RAS National Astronomy Meeting at St Andrews from 1st -5th July. More than 600 astronomers attended the meeting, which included more than 35 separate scientific sessions. The LOC was chaired by Alan Hood and SOC was chaired by Keith Horne (Astronomy) and Ineke De Moortel.
- David Borchers was invited to give a workshop on Spatially Explicit Capture-Recapture methods for camera trap surveys, together with Marcus Rowcliffe from the Zoological

Society of London, at the NCSE meeting in Lowestoft in July. Camera traps are used to survey secretive animals like leopards and jaguars that are difficult to detect by other means. (Info on camera traps here: http://en.wikipedia.org/wiki/Camera_trap. Info on David's camera-trapping collaborators here: <http://www.panthera.org/species/jaguar> and here: <http://capeleopard.org.za/research/leopard/boland>.)

- Ben Stevenson was invited to participate in the annual AD Model Builder developers' meeting, which took place in October. The five-day workshop was held at the Marine Research Institute in Reykjavik, Iceland. AD Model Builder is a widely-used software package for fitting nonlinear statistical models that is developed and maintained by professional statisticians and software developers, and it is extremely unusual, if not unprecedented, for a PhD student to be invited to participate - so congratulations Ben!
- In March, Eric Rexstad visited Cambridge University to deliver a workshop on distance sampling methods at the International Student Conference on Conservation Science.
- In August 24 participants attended the Introductory distance sampling workshop and 18 participants attended the Advanced distance sampling workshop. In total 12 countries were represented among the attendees. Lecturers included Steve Buckland, Len Thomas, David Borchers, Louise Burt, Danielle Harris, Cornelia Oedekoven and Eric Rexstad.
- In September 30 participants from government and industry attended a workshop sponsored by Scottish Government entitled 'Statistical modelling of animal distributions in offshore renewables development areas'. Lecturers were Monique MacKenzie, Lindesay Scott-Hayward, Cornelia Oedekoven and Eric Rexstad.
- St Andrews hosted the International Biometrics Society Channel Network Conference 3rd – 5th July. Approximately 150 delegates attended the meeting which included the Fisher Memorial Lecture given by Prof David Spiegelhalter. It was co-organised by Ruth King (chair and member of the scientific committee), Michail Papathomas, Roland Langrock, Janine Illian, Antony Overstall, Rhona Rodger, Diana Cole (Kent), Mark Brewer (BIOSS) and Sue Welham (VSNi).
- Janine Illian co-organised the 'Good practice in species distribution modelling' meeting in the RSS in London in October. Janine also gave external INLA courses at NINA in April, NOAA Seattle and KEMRI Kenya.
- Vasilis Archontis gave a lecture in the STFC advanced summer school in Mullard Space Science Laboratory 2nd – 6th September with the title 'Numerical simulations in solar physics'.
- Roland Langrock gave a half-day workshop on 'Hidden Markov Models' at the NCSE summer meeting, Lowestoft, in July.
- Groups St Andrews was held in St Andrews from 3rd – 11th August, and organised by Colva Roney-Dougal, Colin Campbell, Edmund Robertson, Max Neunhöffer and Martyn Quick. There were about 200 delegates attending. The main speakers each delivered four talks: Emmanuel Breuillard (Université Paris-Sud 11), 'Approximate groups'; Martin Liebeck (Imperial College), 'Width questions for simple groups'; Alan Reid (Texas), 'Profinite properties of discrete groups'; Karen Vogtmann (Cornell), 'Automorphism groups of right-angled Artin groups'. In addition, there were five invited speakers delivering a plenary talk each: Peter Cameron (St Andrews), 'Permutation groups and transformation semigroups'; Radha Kessar (City University), 'Finiteness conjectures in modular representation theory'; Markus Lohrey (Universität Leipzig), 'Rational subsets in groups'; Derek Robinson (Illinois), 'Recent results on generalised Baumslag-Solitar groups'; Christopher

Voll (Bielefeld), ‘Zeta functions of groups and rings’. In addition, there were nearly 100 contributed talks from the other delegates.

- The biennial summer meeting of the National Centre for Statistical Ecology was held at CEFAS (a marine research institute) in Lowestoft during 15th-19th July. These summer meetings are internal to NCSE, and alternate with International Statistical Ecology Conferences. (The next ISEC will be at Montpellier in July 2014.) There were 52 attendees from 13 institutions at the summer meeting. In total, there were 36 research presentations, and there were also training workshops on the following topics: Hidden Markov models and their applications in ecology (Roland Langrock, St Andrews); Multilevel modelling using Stat-JR (Bill Browne, Bristol); Camera trapping: recent developments and future challenges (David Borchers, St Andrews and Marcus Rowcliffe, Institute of Zoology); A decade of species occupancy modelling: from start to current developments (Gurutzeta Guillera-Arroita and José Lahoz-Monfort, University of Melbourne).
 - In June, St Andrews hosted the 6th International Workshop on Detection, Classification, Localization, and Density Estimation (DCLDE) of Marine Mammals using Passive Acoustics. The meeting was co-organized by Len Thomas and Danielle Harris, both of whom gave talks as did Tiago Marques.
 - In February Stuart King organised a two day workshop on parallel computing, funded as part of a recently awarded EPSRC small equipment grant. Adrian Jackson came up from Edinburgh University to lecture short practical courses on various parallel computing technologies. The workshop was attended by over 30 students and staff, coming from all three divisions of the school and computer science.
 - Alexander Konovalov was invited to organise a special session at the ‘Recent Trends in Rings and Algebras’ conference June 3th–7th, Murcia, Spain (<http://www.um.es/rtra2013/>) giving a lecture on ‘Computational tools for rings and algebras’,
 - The LMS/EPSRC Short Instructional Course ‘Computational Group Theory’ (<http://www-circa.mcs.st-and.ac.uk/cgt2013/>) took place in St Andrews on 29th July - 2nd August. It consisted of a cycle of lectures by principal Speakers: ‘Permutation Groups’ (Alexander Hulpke, Colorado State University); ‘Soluble Groups and p-groups’ (Bettina Eick, Technische Universitt Braunschweig); ‘Matrix Groups/Constructive Recognition’ (Derek Holt, University of Warwick); ‘Finitely Presented Groups’ (Max Neunhöffer). As well as special lectures ‘Algorithmic Generalisations of Small Cancellation Theory’ by Richard Parker and ‘Distributed Computations with GAP’ by Alexander Konovalov, and a series of exercise sessions in the microlab.
 - The International Workshop ‘Parallel programming in GAP’ was held in St Andrews on August 18th-24th. It was supported by the EPSRC project ‘HPC-GAP: High Performance Computational Algebra and Discrete Mathematics’ aimed at reengineering the GAP system to take the advantage of computer architectures suitable for parallel computations. St Andrews speakers included Steve Linton, Reimer Behrends, Vladimir Janjic, Alexander Konovalov, Max Neunhöffer, Markus Pfeiffer and Michael Torpey. Further details and slides can be found at <http://www.gap-system.org/hpcgap2013/>.
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OTHER NEWS

- Ruth King was external examiner for PhD candidate Tatiana Xifara at Lancaster University on the topic ‘Bayesian Inference on a Coupled hidden Markov model for Disease Interactions and a New Position Dependent Metropolis adjusted Langevin algorithm’ in June.
- From 1st June, Ineke De Moortel was appointed as an Affiliate Scientist at the High Altitude Observatory in Boulder, Colorado. The appointment is initially for three years. She was also re-elected as co-chair of the RSE Young Academy of Scotland for a further year.
- Janine Illian was external examiner for two PhD theses, one at LMU Munich in June, and one at Abertay, Dundee in September. Janine was also a member of the assessment committee of the Applied Mathematics and Informatics division (MIA) of INRA (French National Institute for Agricultural Research), Paris, in May.
- Martyn Quick was external examiner for PhD candidate Sarah Middleton at Royal Holloway on the topic ‘Hereditarily just infinite profinite groups that are not virtually pro-p’.
- Kenneth Falconer visited Amiens in June to participate in a PhD defence. He was elected ‘President du Jury d’Examen’ by a 6-1 vote (Kenneth voting against) on the grounds that he was the only jury member wearing a tie, so he had to chair the proceedings using what little French he could remember from school! He also gave a seminar (in English).
- Kenneth Falconer’s book for the masses, ‘Fractals - A Very Short Introduction’ (OUP, £7.99 or £5.27 on Amazon), was published in September. This is the ideal Christmas present for all your family and friends!
- Peter Cameron reports that he has also managed to let himself in for more work; in the time he is not at St Andrews, he is teaching a class of 300 first-year students at Queen Mary how to think like a mathematician. Peter presented this course for the first time last year, and talked about it in the LMS/Gresham Lecture at Gresham College in May. Anyone interested can see a recording of the lecture on the web at <http://www.gresham.ac.uk/lectures-and-events/mathematics-the-next-generation>

NEXT ISSUE

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