



# News

## General News

### University of Melbourne Centre of Excellence

The School of Mathematics and Statistics is pleased to announce that it is now part of another successful ARC Centre of Excellence at the University, based in the School of Chemistry. It will be known as the ARC Centre of Excellence in Exciton Science <http://www.arc.gov.au/centres-excellence-2017-summary>.

Congratulations to John Sader for his involvement as a Chief Investigator on this proposal and to Paul Mulvaney from Chemistry as Centre Director on this successful Centre.

### RMIT University, Public Lecture

Professor Edwin Galea, of the University of Greenwich (London, UK), gave a public lecture 'Safety in Numbers' in the frame of a workshop on Fire Emergency Management on 22 November.

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## Completed PhDs

### Curtin University

- Dr Zahra Hassan A Al Helal, *Optimal control of diabetes*, supervisor: Volker Rehbock.

### Macquarie University

- Dr Alexander Campbell, *A higher categorical approach to Giraud's non-abelian cohomology*, supervisor: Ross Street.

### RMIT University

- Dr Johannes Kotzerke, *BioTwist: overcoming severe distortions in ridge-based biometrics for successful identification*, supervisors: Kathy Horadam, Stephen Davis and Arathi Arakala. Double-badged award with The University of Twente, Netherlands.
- Dr Fahad Musallam Alharbi, *Helical flow of yield stress fluids*, supervisors: John Shepherd and Andrew Stacey.

### University of Adelaide

- Dr David Wilke, *Pressure and flow within the umbilical vessels*, supervisors: Jim Denier, Trent Mattner, Yee Khong and Yvonne Stokes.

- Dr David Bowman, *Holomorphic flexibility properties of spaces of elliptic functions*, supervisors: Finnur Larusson and Nicholas Buchdahl.
- Dr David Arnold, *Thin-film flows in helical channels*, supervisors: Yvonne Stokes and Edward Green.
- Dr Kale Davies, *On the derivation and application of closure approximations of cellular automata models*, supervisors: Nigel Bean, Ben Binder and Josh Ross.

#### University of Melbourne

- Dr Ling Ding, *Regression clustering using Gibbs sampler and optimal cluster number estimation*, supervisor: Guoqi Qian.
- Dr Hamid Mokhtar, *A few families of Cayley graphs and their efficiency as communication networks*, supervisor: Sanming Zhou.
- Dr Elena Tartaglia, *Rational and logarithmic minimal models and their generalisations*, supervisor: Paul Pearce.

#### University of New South Wales

- Dr Jieyi He, *Detecting and modelling serial dependence in non-Gaussian and non-linear time series*, supervisor: William Dunsmuir.
- Dr Isaac Donnelly, *Diffusion: continuum, networks and limits*, supervisors: Bruce Henry and Chris Angstmann.

#### University of Sydney

- Dr John Mitry, *A geometric singular perturbation approach to neural excitability*, supervisor: Martin Wechselberger.
- Dr Michael Barwick, *Morse classification of low order jet spaces*, supervisor: Laurentiu Paunescu.

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### Awards and other achievements

#### Australian National University

- Dr Zsuzsanna Dancso has been awarded an ARC Early Career grant worth \$360,000 to study Homological methods in combinatorics, algebra and geometry. This project aims to solve problems in graph theory, lattice theory and geometry using algebraic techniques. The techniques and language provided by this algebraic approach will be used to gain fresh insight into classical problems, prove stronger theorems and uncover connections between different areas. This project intends to integrate Australia's strength in homological algebra and category theory with applications in various different fields of mathematics. This is expected to provide tools for further investigation of applications in other fields, including computer science and combinatorial optimisation.
- Associate Professor Uri Onn has been awarded an ARC Future Fellowship worth \$776,000 to study Representations of arithmetic groups and their

associated zeta functions. This project aims to investigate deep connections between number theory and group theory by studying linear actions of arithmetic groups. Arithmetic groups are used in geometry, dynamics, number theory and other areas of pure mathematics. This project will study their representations from two perspectives. First, it will establish properties of the associated zeta functions to resolve open problems about the asymptotic behaviour of the dimensions of the irreducible representations. Second, it will explore the evolution of representations across families of groups under new induction and restriction functors, in analogy with creation and annihilation operators in physics. The project will enhance Australia's capacity in representation theory and group theory, the mathematics that underline symmetry in nature.

- Dr Timothy Trudgian has been awarded an ARC Future Fellowship worth \$652,000 to study Explicit methods in number theory: Computation, theory and application. This project aims to use explicit estimates to unify three problems in number theory: primitive roots, Diophantine quintuples, and linear independence of zeroes of the Riemann zeta-function. It will use computational and analytic number theory to reduce the quintuples problem to a soluble level. Pursuing relations between the zeta zeroes will overhaul many current results. This project will apply its findings about primitive roots to signal processing, cryptography and cybersecurity.
- Professor Murray Batchelor has been awarded an ARC Discovery grant worth \$362,000 to study Mathematical structure of the quantum Rabi model. This project aims to find the mathematical structure behind the quantum Rabi model, the simplest model describing the interaction between quantum light and matter. The Rabi model is the connecting link in the essential interplay between mathematics, physics, and technological applications. Solving the mathematical structure behind it is expected to form the basis for solving related and equally important models. Such models describe a qubit, the building block of quantum information technologies, and so could realise quantum algorithms and quantum computations.
- Professor Xu-Jia Wang, Professor Neil Trudinger and Dr Jiakun Liu have been awarded an ARC Discovery grant worth \$538,500 to study Variational theory for fully nonlinear elliptic equations. This project aims to develop new methods and techniques to solve challenging mathematical problems in fully nonlinear partial differential equations arising in important applications. The project will develop methods and techniques to study these equations' regularity and variational properties. This project is expected to establish comprehensive theories and enhance and promote Australian participation and leadership in this area of mathematics.

### Macquarie University

- Dr Richard Garner has been awarded an ARC Future Fellowship worth \$805,054 to study Enriched categories: Applications in geometry and logic. The project aims to apply enriched categories to fields including algebraic

and differential geometry and theoretical computer science. Enriched categories, introduced in Australia in the 1960s, underlie major mathematical results such as Grothendieck's revolutionary work in algebraic geometry. Emerging scientific areas like higher differential geometry and homotopy type theory urgently need the formalism of enriched categories to be made applicable to them. Success in this could rapidly develop these areas and solidify Australia's position as a leading international force in mathematics.

### Monash University

- Dr Norm Do was honoured at the 2016 Australian Government Department of Education and Training Citations for Outstanding Contributions to Student Learning. Norm received a citation 'For exceptional commitment and contributions that inspire students at all levels to pursue mathematics and to appreciate its nature, beauty and power' (<https://www.monash.edu/news/internal/the-insider/22-sep-2016/recognition-for-teaching-innovation>).
- Dr Kengo Deguchi has been awarded an ARC EARly Career grant worth \$360,000 to study mathematical descriptions of magneto-hydrodynamic turbulence. The project aims to better predict magneto-hydrodynamic turbulence than existing empirical models. Turbulence in high-speed flows of electrically conductive fluid sustains magnetic fields in various engineering, geophysical, and astrophysical flows. However, investigations into magneto-hydrodynamic flows have been limited to slow flows, and the application of the results to the actual problems hindered. This project aims to improve magneto-hydrodynamic flow control in future energy-generating technology, using theoretical and numerical tools that are mathematically consistent with the high-speed limit of the governing equations. More efficient electric generators could improve Australia's future energy supply with fewer emissions of global warming gases.
- Dr Pu Gao has been awarded an ARC EARly Career grant worth \$306,759 to study 'Probabilistic combinatorics: properties of large networks'. This project aims to analyse important real-world network properties such as robustness and reliability, investigate the performance of network algorithms such as message propagation, and solve fundamental problems in probabilistic combinatorics. Random graphs are indispensable for modelling and analysing the growing Internet and many social networks, due to their large size and random nature. The intended outcome is improved understanding of properties of real networks, including robustness and message propagation performance. It should provide better knowledge of the evolutionary behaviour of large growing networks, relevant to a world that is influenced greatly by the Internet.
- Dr Anita Liebenau has been awarded an ARC EARly Career grant worth \$324,499 to study 'Advances in graph Ramsey theory'. This project aims to solve significant questions at the forefront of graph Ramsey theory, which provides the theoretical background for understanding networks that are omnipresent in the modern world. Major progress is anticipated on the

recently introduced concept of Ramsey equivalence, including the development of deep new tools that combine probabilistic methods, extremal graph theory and graph decomposition techniques. The project will use these new tools to solve old questions on the structure of minimal Ramsey graphs, thus fostering the international competitiveness of Australian research and enhancing Australia's reputation as a knowledge nation.

- Dr Daniel Horsley has been awarded an ARC Future Fellowship worth \$766,000 to study 'Edge decomposition of dense graphs, including the Nash-Williams conjecture'. Edge decomposition of graphs is important for graph theory, combinatorial design theory and finite geometry, and also has strong applications to digital communication and information technologies. It is anticipated that the project will result in methods for edge decomposition of dense graphs, the solution of famous open problems, and a deeper, more cohesive understanding of edge decomposition.
- Associate Professor Jessica Purcell has been awarded an ARC Future Fellowship worth \$933,054 to study 'Interactions of geometry and knot theory'. This project aims to use recent breakthroughs in hyperbolic geometry and Kleinian groups to relate geometry to knots which are mathematical objects arising in microbiology, chemistry, physics, and mathematics. Knots are often studied via the space around them known as the knot complement. Knot complements decompose into geometric pieces, and the most common geometry is hyperbolic, which completely determines a knot. However, how to obtain information on the hyperbolic geometry of a knot from a classical description is unknown. This project will obtain information by uncovering results that would enable classification of even extremely complicated knots, and could affect mathematics and other fields.
- Dr Jerome Droniou, Professor Dr Robert Eymard and Dr Gianmarco Manzini have been awarded an ARC Discovery grant worth \$359,500 to study 'Discrete functional analysis: bridging pure and numerical mathematics'. This project aims to create the first numerical analysis tools to design robust, mathematically proven algorithms for engineering problems in underground flows. These equations are essential to accurately model and understand phenomena such as oil extraction, carbon sequestration and groundwater contamination. The project will provide powerful mathematical tools to improve the reliability of numerical simulations for such challenges and significantly improve the reliability of the predictions under assumptions that are compatible with field applications.
- Associate Professor Zihua Guo, Dr Ji Li, Professor Carlos Kenig and Professor Kenji Nakanishi have been awarded an ARC Discovery grant worth \$350,000 to study 'Harmonic analysis and dispersive partial differential equations'. Harmonic analysis is used to study these equations; in which a system's local behaviour is used to analyse global properties, using techniques such as the Fourier transform. The project will investigate central problems in the area, revealing deep connections between analysis and geometry, and apply these to study the solutions' long-term behaviour to non-linear equations. Expected outcomes include theoretical results and

practical techniques to solve non-linear dispersive equations, which arise in quantum and fluid mechanics.

- Associate Professor Todd Oliynyk has been awarded an ARC Discovery grant worth \$276,000 to study ‘Gravitating relativistic material bodies: a mathematical analysis’. This project aims to establish the local-in-time existence and geometric uniqueness of solutions to the Einstein-Elastic equations representing systems of gravitating relativistic material bodies, and to understand the long-time behaviour of these solutions. In spite of their importance to astrophysics, almost nothing is known about the mathematical properties of solutions to the equations of motion governing gravitating systems of relativistic material bodies. This project would provide mathematical tools for the study of gravitating relativistic material bodies and provide guidance on developing stable numerical schemes for simulations that are essential for comparing theory with experiment. This would significantly improve current understanding of the behaviour of matter and gravitational fields near the matter-vacuum boundary of bodies and help understanding of the physics of these boundaries.
- Professor German Valencia, Professor Dianne Cook, Associate Professor Csaba Balazs, Professor Andreas Buja and Associate Professor Marzia Rosati have been awarded an ARC Discovery grant worth \$394,000 to study ‘Visualisation of multidimensional physics data’. This project aims to link multi-parameter models used in physics to explore experimental data, and statistical tools for multivariate analysis and visualisation. It addresses an important gap in the understanding of phenomenological physics analyses containing many simultaneously important parameters. This is expected to improve the understanding of results in multi-parameter models.

### **Queensland University of Technology**

- Professor Matthew Simpson, Associate Professor Ruth Baker and Associate Professor Michael Plank have been awarded an ARC Discovery grant worth \$392,000 to study ‘Mathematical models of cell migration in three-dimensional living tissues’. This project aims to develop mathematical models of cell migration in crowded, living tissues. Existing models rely solely on stochastic simulations, and therefore provide no general mathematical insight into how properties of the crowding environment (obstacle shape, size, density) affect the migration of cells through that environment. This project will produce mathematical analysis, mathematical calculations and exact analytical tools that quantify how the crowding environment in three-dimensional living tissues affects the migration of cells within these tissues. Long term effects will be the translation of this new mathematical knowledge into decision support tools for researchers from the life sciences.

### **RMIT University**

- Associate Professor Clifford Da Costa, received a citation from the Office of Learning and Teaching for developing engaging learning environments for

statistics students, with a non-mathematical background, that promotes self-directed learning and an appreciation of statistics in their lives.

- Professor Xinghuo Yu, Dr Mahdi Jalili, Professor Lewi Stone and Professor Jinhua Lu have been awarded an ARC Discovery grant worth \$301,500 to study ‘Engineering evolving complex network systems through structure intervention’. Complex network systems with evolving components are ubiquitous in nature and society. The science of biological networks, the Internet and large-scale power networks demand tools to understand and influence their evolving dynamics. This project could result in a breakthrough theory in network science and technology to augment biological systems and power grids. Expected benefits include cost-effective augmentation of power networks injected with renewable energy sources, and advancing basic biology research.

### University of Adelaide

- Dr Guo Chuan Thiang has been awarded an ARC EARly Career grant worth \$357,000 to study ‘T-duality and K-theory: unity of condensed matter and string theory’. This project aims to uncover deep mathematical structures which underlie recent discoveries at the forefront of string theory and condensed matter physics, using K-theory and T-duality as guiding themes. Inspired by string theory, T-duality techniques and geometric Fourier–Mukai transforms will be developed to study topological phases of matter. Similarly, topological materials motivate the detailed study of real twisted K-theory and T-duality, which are then applicable to orientifold string theories. Anticipated outcomes include a deeper understanding of the theory of topological materials and its connection to string theory, and well-motivated mathematics widely applicable to the physical sciences. This understanding paves the way for novel technological applications.
- Associate Professor Yvonne Stokes has been awarded an ARC Future Fellowship worth \$904,000 to study ‘Mathematics as the key to modern glass and polymer fibre technology’. This project aims to develop fully coupled flow and energy models to determine the preform structure and fibre-drawing parameters needed to fabricate a desired microstructured optical fibre by stretching of the preform to a fibre. It will focus on polymer to develop a non-Newtonian flow model, which can handle the subset of Newtonian glass fibre drawing. It will develop fast, powerful three-dimensional predictive tools to solve the models and experimentally validate solutions. This work will direct future design of microstructured optical fibres to empower next-generation optical-fibre technologies. Expected outcomes are fibre designs for telecommunications, medicine, biotechnology, sensing and imaging.
- Professor Peng Shi, Associate Professor Cheng-Chew Lim and Professor Ligang Wu have been awarded an ARC Discovery grant worth \$286,000 to study ‘Fuzzy modelling and design of complex networked systems’. This project aims to develop analysis and synthesis approaches for non-linear networked control systems, including modelling, stability analysis and design problems. The non-linear effects and analysis of networked control

systems have received considerable attention because of the universal existence of nonlinearities in practice. Network-based non-linear systems are widely used but face problems from non-linearities and networks. This project will establish a software-based nonlinear networked control system platform to test the presented algorithms and strengthen the scenarios in applications. This project is expected to increase Australian excellence in cyber-security and advanced manufacturing.

- Professor Mathai Varghese and Dr David Baraglia have been awarded an ARC Discovery grant worth \$335,000 to study ‘Parametrised gauge theory and positive scalar curvature’. This project aims to study innovative extensions of Seiberg–Witten gauge theory with new applications to the topology of metrics of positive scalar curvature on four-dimensional manifolds. Since Atiyah–Bott, Donaldson, Hitchin, and Seiberg–Witten’s work on various equations in gauge theory, profound applications have changed the geometry and topology of low dimensional manifolds. Parametrised index theory has obtained deep results on the topology of metrics of positive scalar curvature in higher dimensions, but these methods do not work in the case of the fourth dimension. This project will develop (parametrised) Seiberg–Witten gauge theory as a new approach to the study of the topology of metrics of positive scalar curvature in four dimensions. Expected outcomes include new invariants related to positive scalar curvature in four dimensions.

### University of Melbourne

- Associate Professor Deb King received a ‘Citation for Outstanding Contributions to Student Learning’ in ‘The Australian Awards for University Teaching’ (<http://www.senatorbirmingham.com.au/Latest-News/ID/3203/Academics-lauded-for-innovative-teaching>).
- Associate Professor Enrico Valdinoci has been listed as a ‘Thomson Reuters Highly Cited Researcher’.
- Stephen Leslie received the 2016 Woodward Medal for Science and Technology. The medal is awarded annually to a member of staff of the University of Melbourne for research published in the previous five years that has made a significant contribution to knowledge. Stephen’s award was for ‘The fine-scale genetic structure of the British population’, which appeared in *Nature*, volume 519, pp. 309–314, 2015.
- Dr Nicholas Beaton has been awarded an ARC EARly Career grant worth \$322,054 to study ‘Statistical mechanics and the topology of polymer systems’. This project aims to study the behaviour of systems of long polymers in solution, and the effects of temperature, solvent and other environmental properties. Polymer models capture important physical properties of real-world molecules like DNA. This project will study the topology of polymer chains in tightly confined spaces. Knots and links hinder important biological processes like DNA replication, and this project will research how entanglement forms and how the biological mechanisms are used to manage it. The project is expected to have both important biological consequences

and to enhance Australia's position as a centre for research in statistical mechanics.

- Dr Sophie Zaloumis has been awarded an ARC EARly Career grant worth \$345,491 to study 'Mathematical and statistical modelling of antimalarial drug action'. This project aims to develop a mathematical model to optimise global antimalarial treatment policy. Malaria-causing parasites are resistant to the most potent antimalarial drug available. If left unaddressed, a catastrophic rise in global malaria incidence and mortality could occur. Changes to global antimalarial treatment policy increasingly rely on mathematical models, but they do not encompass recent breakthroughs in antimalarial drug action and the immune response. This project's model is expected to improve antimalarial drug dosing regimens and control the spread of antimalarial drug resistance.
- Dr Mark Holmes has been awarded an ARC Future Fellowship worth \$776,000 to study 'Phase transitions in stochastic systems'. This project aims to understand models of physical and biological phenomena in the presence of uncertainty/randomness. Such models often exhibit phase transitions if a variable defining the model is modified. For example, a population explosion can occur if the average number of offspring per individual is larger than one, while macroscopic defects can occur in a material if the density of microscopic defects is larger than some threshold. This research could lead to strategies for directing physical and biological systems towards preferred states or phases, and better prediction of adverse events such as fracturing of Antarctic sea ice.
- Professor Edmund Crampin, Dr Vijay Rajagopal, Professor Dr Hywel Roderick and Professor Christian Soeller have been awarded an ARC Discovery grant worth \$316,000 to study 'How calcium makes the heart grow'. This project aims to develop a mathematical model of calcium signalling in heart cells. Our hearts grow to adapt to long-term changes, such as during development and in pregnancy or heart disease. Biochemical reactions involving calcium control the growth of heart cells, which also use calcium signalling to trigger contraction with each beat. How calcium controls the heartbeat and regulates cell growth is unknown. This project will develop a new mathematical model of calcium signalling in heart cells to understand important cellular adaptation processes. This knowledge will lead to the ability to independently control cellular pathways mediated by calcium, opening new avenues in biotechnology and biomedicine.
- Professor Aurore Delaigle has been awarded an ARC Discovery grant worth \$339,000 to study 'Statistical challenges involving indirect data'. This project aims to develop statistical methodology for solving contemporary problems involving indirectly observed data whose complexity is exacerbated by factors such as incompleteness or episodic availability. Modern statistics find it difficult to analyse complex data which contain important information only in an indirect way, such as data measured with noise or aggregated data. This project considers both finite dimensional data and functional data. The expected methodology will be able to solve frontier problems, where only sophisticated methods can access information. This

is expected to benefit brain studies, economics, infectious disease, nutrition and public health.

- Professor Peter Forrester and Associate Professor Paul Norbury have been awarded an ARC Discovery grant worth \$318,000 to study ‘Random matrix products, loop equations and integrability’. This project aims to research integrable structures inherent in random matrix products and loop equations. These are topics in random matrix theory, which is well known for its diverse appearances in mathematics and its applications. Integrable structures provide random matrix theory with quantitative predictions for use in these applications; link seemingly distinct theories; and are a unifying theme of fundamental and lasting importance. This project will strengthen international collaborations, provide research training, and make the footprint of Australian mathematical science more visible.
- Professor Christian Haesemeyer has been awarded an ARC Discovery grant worth \$345,000 to study ‘Algebraic invariants of singularities’. This project aims to study the local and global behaviour of singularities that algebraic equations can describe via difficult algebraic invariants constructed from (algebraic) functions on the geometric object. A geometric object has a singularity at a point where its tangent directions do not behave the way they should. Examples include black holes, the vertex of a cone or a road intersection. This project is expected to contribute to fundamental research goals in pure mathematics, and increase the international competitiveness of Australian mathematics research.
- Associate Professor James McCaw, Associate Professor Julie Simpson, Associate Professor Jane Heffernan and Dr Federico Frascoli have been awarded an ARC Discovery grant worth \$335,000 to study ‘Mathematical and statistical methods for modelling in vivo pathogen dynamics’. This project aims to develop mathematical models and Bayesian statistical methods that better capture how natural defence responses and drugs help control infection. When viruses (e.g. influenza) or parasites (e.g. malaria) invade the human body, they begin to replicate. To date, only simple mathematical models have been developed to capture these processes, and these models are not well formulated. This project will improve biomathematics and biostatistical algorithms for pathogen dynamics and is ultimately expected to benefit public health and clinical research aimed at alleviating the effect of infectious diseases on human health.
- Professor Dr Enrico Valdinoci and Dr Serena Dipierro have been awarded an ARC Discovery grant worth \$286,000 to study ‘Non-local equations at work’. Non-local fractional equations arise naturally in many fields of pure and applied mathematics. This project will consider symmetry and rigidity results; problems from atom dislocation theory; nonlocal minimal surfaces; symbolic dynamics for nonlocal equations; and free boundary problems. This project aims to obtain substantial progress in this field, both from the point of view of the mathematical theory and in view of concrete applications. This project should contribute to the development of the mathematical theory and give insight for concrete applications in physics and biology.

### University of New England

- Dr Maolin Zhou has been awarded an ARC EARly Career grant worth \$330,324 to study ‘Nonlinear free boundary problems: propagation and regularity’. This project aims to understand the propagation profile and regularity of two important classes of free boundary problems. Nonlinear free boundary problems arise from many applied fields, and pose great challenges to the theory of nonlinear partial differential equations, as the underlying domain of the solution to such problems has to be solved together with the solution itself. This research is expected to enhance the existing theory of partial differential equations, and extend its applications to new situations such as flow through porous media and spreading of invasive species.
- Associate Professor Shusen Yan, Professor Edward Dancer, Professor Yihong Du and Professor Chang-Shou Lin have been awarded an ARC Discovery grant worth \$345,000 to study ‘Non-linear partial differential equations: bubbles, layers and stability’. This project aims to investigate non-linear elliptic partial differential equations in well-established models in applied sciences. The treatment of them challenges the existing mathematical theory. This project will enrich and expand the mathematical theory in semi-linear elliptic equations to understand the equations under investigation.

### University of New South Wales

- The Canada based Institute for Combinatorics and its Applications (ICA) recently announced that Catherine Greenhill has been awarded the Hall medal. This medal is a worldwide award for outstanding work by mid-career researchers in combinatorics.
- Dr Michael Feischl has been awarded an ARC EARly Career grant worth \$313,964 to study ‘Optimal adaptivity for uncertainty quantification’. This project aims to use an adaptive mesh refinement algorithm to improve the ratio of approximation accuracy versus computational time. Partial differential equations with random coefficients are crucial in simulating groundwater flow, structural stability and composite materials, but their numerical approximation is difficult and time consuming. Advances in adaptive mesh refinement theory allow full analysis and mathematical understanding of the convergence behaviour of the proposed algorithm. The project intends to develop a theory of adaptive algorithms and freely available software for their reliable (and mathematically underpinned) simulation which could solve problems beyond the capabilities of even the most powerful computers.
- Dr David Harvey has been awarded an ARC Future Fellowship worth \$805,054 to study ‘Counting points on algebraic surfaces’. This project aims to develop algorithms for calculating the number of solutions to polynomial equations and to compute zeta functions of certain types of algebraic varieties. Existing algorithms cannot solve these problems. The new

algorithms will enable researchers in number theory to test and refine conjectures on generalisations of many famous problems, such as the Sato–Tate conjecture, the Lang–Trotter conjecture and the Birch–Swinnerton–Dyer conjecture. The project will also have a flow-on effect in other areas of mathematics and computer science where zeta functions play a central role, including cryptography, coding theory and mathematical physics.

- Professor Michael Cowling has been awarded an ARC Discovery grant worth \$286,000 to study ‘Homogeneous metric spaces’. This project aims to develop a framework to model real-world phenomena simultaneously to illustrate their similarities and differences. It will apply techniques developed to deal with one type of homogeneous metric space to another type and improve the understanding of the unifying features of these model spaces. This will enable the transfer of techniques from one area to another, increasing the ease and efficiency with which they may be used.
- Dr Pinhas Grossman, Professor David Evans and Professor Masaki Izumi have been awarded an ARC Discovery grant worth \$318,143 to study ‘Quadratic fusion categories: a frontier in subfactor theory’. Fusion categories are mathematical structures that generalise the symmetries of finite groups; this project aims to investigate their quantum symmetries. These structures arise as invariants of subfactors in operator algebras and in mathematical models of conformal field theory. The quadratic fusion categories encompass most known subfactors that do not come from finite or quantum groups and form a vast frontier about which little is known. By uncovering the symmetries of the quadratic fusion categories, the project will advance subfactor theory and provide new models for conformal field theory. Progress in these fields will have applications to the emerging technology of quantum computing.
- Professor Igor Shparlinski has been awarded an ARC Discovery grant worth \$345,000 to study additive combinatorics, arithmetic algebraic geometry, and apply them to the theory of finite fields. Additive combinatorics and algebraic geometry are mostly developed over the complex numbers and other fields of characteristic zero. This project will bring the power of these different, discrete and continuous areas to finite fields, opening new perspectives for progress on several major problems, inaccessible by other methods. The project will advance and affect the development of number theory research in Australia and methodologies useful in mathematics and computer science, including cryptography.
- Professor Fedor Sukochev, Dr Denis Potapov and Professor Alan Carey have been awarded an ARC Discovery grant worth \$388,000 to study ‘New methods in spectral geometry’. This project aims to use methods from mathematical scattering theory to resolve problems in the spectral analysis and index theory of differential operators. Both areas underpin the theoretical understanding of physical materials at micro length scales where quantum phenomena dominate. The project will develop new mathematical results in spectral analysis and geometry, and apply its results to theoretical models of quantum phenomena whose spectral properties are at

the limit of the range of mathematical techniques. Solving these problems is expected to influence non-commutative analysis.

- Associate Professor Mark Tanaka and Associate Professor Ruiting Lan have been awarded an ARC Discovery grant worth \$286,000 to study ‘Microbial natural history and molecular evolution’. This project aims to develop mathematical and computational models of microbial evolution that capture dynamics at both within-host and between-host scales, combined with processes of mutation. Integration of these elements with computational statistical methods will produce a framework that will enable inference from genome sequencing data. The mathematical models will be applied to bacterial genomic data to investigate how natural selection acts on experimental and natural populations of microorganisms. The mathematical models and statistical approaches developed here are intended to be applicable to infectious disease of both humans and domesticated animals, and could influence public health policies.

### University of Newcastle

- Dr Amir Salehipour (School of Mathematical and Physical Sciences) together with Miss Leila M. Naeni (School of Built Environment, UTS, and School of Electrical Engineering and Computer Science, UON) won the prestigious 2016 Project Management Achievement Award — Research Category, awarded by Australian Institute of Project Management, for conducting outstanding research in the context of enhancing the well-known earned value technique with advanced mathematics and statistics tools in order to overcome several limitations of the earned value, particularly, when determining acceptable levels of deviations from the baseline plan. The study, which was published in *Journal of Construction Engineering and Management*, concluded that implementing the developed tools together with the traditional tools noticeably improves the project controlling scheme (<http://ascelibrary.org/doi/10.1061/%28ASCE%29CO.1943-7862.0001078>).
- Dr Amir Salehipour has been awarded an ARC EARly Career grant worth \$360,000 to study ‘Exact and hybrid algorithms for the Aircraft Landing Problem’. This project aims to develop algorithms with superior guaranteed performance. Aircraft Landing Problems (ALP) are an important class of decision problems. Optimal solution of an ALP is applicable in transportation and health care delivery, benefitting systems experiencing long delays. This project aims to address several of the Australian Government’s Science and Research Priorities, focusing on food supply chains, effective operation and resource allocation in transport, and better models of health care delivery and services.
- Dr Yuen Yong has been awarded an ARC Discovery grant worth \$296,000 to study ‘Microcantilevers for multifrequency atomic force microscopy’. This project aims to design a microcantilever with high-performing sensors more sensitive and with better noise performance than the typical optical system used in commercial Atomic Force Microscopes (AFMs). The AFM, a nanotechnology instrument, uses a microcantilever (with an extremely

shape probe) to interrogate a sample surface. It has made important discoveries in nanotechnology, life sciences, nanomachining, material science and data storage systems. Despite its success, the technique's spatial resolution and quantitative measurements are limited. This project could lead to breakthrough technologies such as atomic force spectroscopy to study elastic modulus of nanostructures, and establish Australia's prominence in this emerging field.

### University of Queensland

- Dr Hien Nguyen has been awarded an ARC EARly Career grant worth \$360,000 to study 'Feasible algorithms for big inference'. This project aims to develop algorithms for computationally-intensive statistical tools to analyse Big Data. Big Data is ubiquitous in science, engineering, industry and finance, but needs special machine learning to conduct correct inferential analysis. Computational bottlenecks make many tried-and-true tools of statistical inference inadequate. This project will develop tools including false discovery rate control, heteroscedastic and robust regression and mixture models, via Big Data-appropriate optimisation and composite-likelihood estimation. It will make open, well-documented, and accessible software available for the scalable and distributable analysis of Big Data. The expected outcome is a suite of scalable algorithms to analyse Big Data.
- Professor Geoffrey McLachlan and Associate Professor Shu-Kay Angus Ng have been awarded an ARC Discovery grant worth \$335,000 to study 'Expanding the role of mixture models in statistical analyses of big data'. This project aims to develop theoretical procedures to scale inference and learning algorithms to analyse big data sets. It will develop analytic tools and algorithms to analyse big data sets which classical methods of inference cannot analyse directly due to the data's complexity or size. This will accelerate the progress of scientific discovery and innovation, leading, for example, to new fields of inquiry; to an increase in understanding from studies on human and social processes and interactions; and to the promotion of economic growth and improved health and quality of life. Such applications should lead to breakthrough discoveries and innovation in science, engineering, medicine, commerce, education and national security.
- Professor S. Ole Warnaar and Professor Eric Rains have been awarded an ARC Discovery grant worth \$357,000 to study 'Symmetric functions and Hodge polynomials'. This project aims to explain a connection between two seemingly disparate mathematical notions: mixed Hodge polynomials of certain varieties, naturally arising in algebraic geometry, and Macdonald polynomials from the theory of symmetric functions. This project will resolve this connection using symmetric function theory, algebraic combinatorics and representation theory. This project could enhance Australia's international reputation in algebraic combinatorics, combinatorial representation theory and algebraic geometry.

## University of Sydney

- Andrew Crisp received a Vice-Chancellor's Award for Outstanding Teaching.
- Dr Kevin Coulembier has been awarded an ARC EARly Career grant worth \$360,000 to study 'Quasi-hereditary categories in Lie theory'. This project aims to use diagram algebras and categorical representation theory to study fundamental open problems in the representation theory of Lie algebras and their generalisations. The concept of symmetry is omnipresent in science and culture. Its mathematical study leads to the notion of groups, algebras and their representation theory. Representation theory is applicable in many active research areas, including subatomic particle physics and quantum computing. Solutions to these problems could lead to better understanding of several categories of representations of Lie algebras, and create new research tools.
- Professor Anthony Henderson and Associate Professor Pramod Achar have been awarded an ARC Discovery grant worth \$345,000 to study 'Modular character sheaves'. This project aims to complete the fundamental mathematical theory of modular group representations, the algebraic description of symmetry over finite number systems. Group representation theory can be applied to any linear problem involving symmetry. However, the modular case, where the characteristic of the underlying field is a prime number, is less understood than real or complex scalars, and this lack of understanding blocks potential applications. This project will use geometric methods to answer questions about modular representations of the finite groups of Lie type, the most important class of finite groups. This project could make modular representation theory essential for computations, enabling faster solutions to problems of linear algebra and allowing future applications in such areas as data transmission technology.
- Professor Jacqui Ramagge, Dr Nathan Brownlowe, Professor Iain Raeburn and Professor Marcelo Laca have been awarded an ARC Discovery grant worth \$286,000 to study 'From actions to operator algebras and their equilibrium states'. This project aims to construct  $C^*$ -algebras from various types of actions and analyse their equilibrium states. Operator algebras are widely used in mathematics and to describe physical systems. They are technically challenging to work with and impossible to fully classify, making detailed analysis of large classes of examples important research in the area. This project will construct  $C^*$ -algebras from various actions; analyse their equilibrium states; and consider actions of semigroups and groupoids. The project expects to produce significant mathematical outcomes, and the findings will be important beyond academia, expand Australia's knowledge base and foster Australian competitiveness.
- Associate Professor Qiying Wang, Professor Shiqing Ling and Professor Weidong Liu have been awarded an ARC Discovery grant worth \$288,471 to study 'Non-linear cointegrating regression with endogeneity'. This project aims to develop the asymptotic theory of estimation and statistical inference in models concerned with non-linear co-integrating regression with endogeneity and long memory. It will tackle a number of long-standing

technical problems related to non-linear covariance functionals and non-linear transformation of nonstationary time series. It is intended to provide technical tools for practitioners to study the long-run relationship of economic variables, and could apply to a range of statistical, empirical finance and economic models, enhancing national leadership in these areas.

- Professor Jean Yang, Associate Professor Samuel Mueller, Dr John Ormerod, Dr Pengyi Yang and Professor Graham Mann have been awarded an ARC Discovery grant worth \$354,500 to study ‘Prognosis based network-type feature extraction for complex biological data’. This project aims to develop statistical tools that integrate high-throughput molecular data with biological knowledge to make discoveries in complex diseases. This project uses machine learning methods, statistical models and proteomic platforms to identify relationships among clinico-pathologic and molecular measurements. It will produce tools and insights that are intended to accelerate the process of biologically and clinically significant discoveries in biomedical research. This project will help Australian researchers in statistics and users of statistics (from fields as diverse as biology, ecology, medicine, finance, agriculture and the social sciences) to make better predictions that are easier to understand.
- Professor Ruibin Zhang has been awarded an ARC Discovery grant worth \$416,500 to study ‘Geometric themes in the theory of Lie supergroups and their quantisations’. This project aims to develop mathematics on the geometry of super spaces and the algebra of super transformations, which are the cornerstones of the mathematical foundation of supersymmetry. The Large Hadron Collider at the European Organization for Nuclear Research is investigating supersymmetry as a possible symmetry of fundamental physics. Its empirical verification would confirm the existence of new constituents of matter, and reveal deep structures of space-time beyond the framework of Einstein’s general relativity. Results of the project are expected to be directly applicable to high energy physics.

#### **University of Western Australia**

- Dr Luke Morgan received the UWA Vice-Chancellor’s Early Career Investigator award.
- Professor Michael Small received the UWA Vice-Chancellor’s Senior Research Award.
- Professor Timothy Sercombe, Associate Professor Anthony Roberts, Professor Xiaozhi Hu, Dr Vivien Challis and Professor Joseph Grotowski have been awarded an ARC Discovery grant worth \$347,000 to study ‘Predicting strength of porous materials’. This project aims to develop a predictive theory of strength for unflawed, low-ductile porous materials — an unsolved problem in computational solid mechanics. Three-dimensional printing of lightweight, porous materials is used in industry, medicine and science. The project will develop the theory and conduct experiments on porous metallic and polymeric samples made using additive manufacturing, which

require understanding and optimisation of the building of fine scale features. Understanding strength should improve design of stronger materials, by using and extending the capabilities of three-dimensional printing. These advances will further provide a much-needed basis for a fundamental understanding of fracture in other porous materials important to society such as concrete, rocks, porous ceramics and bone implants.

### University of Wollongong

- Noel Cressie was awarded the 2016 Barnett Prize by the Royal Statistical Society, London, for excellence in environmental statistics.
- Dr Alexandra Burden has been awarded an ARC EARly Career grant worth \$360,000 to study ‘Statistical tools for assessing effects of environmental change’. This project aims to develop statistical tools for improving prediction of environmental exceedances, such as atmospheric carbon dioxide sources and sinks. Predicting extreme environmental conditions or events is crucial for effective environmental decision-making and management. The project will develop the tools using statistical inference based on a statistical model that combines predictions from related scientific models. In the case of carbon dioxide, improving prediction reliability by reducing bias and uncertainty whilst accounting for model-based dependence is an important step toward mitigating carbon dioxide sources and protecting carbon dioxide sinks. This capability is crucial for adaptive planning and a resilient society.
- Associate Professor Ngamta Thamwattana and Professor James Hill have been awarded an ARC Discovery grant worth \$248,499 to study ‘Optimal electromaterial structures for energy applications’. This project aims to develop new mathematical and modelling approaches to determine optimal configurations and parameters for material structures created from three-dimensional printing of combined metals and electromaterials. Electromaterials are needed for sustainable energy, but solving coupled-systems of highly nonlinear governing equations is needed for optimal control of spatial arrangement and composition in nano and micro-structural domains. Dealing with this mathematical complexity is critical to developing high efficiency energy generation and gas storage systems. This is expected to enhance transport mechanisms within electrochemical devices and create opportunities for industry to use electrofunctional materials.
- Professor Song-Ping Zhu, Professor Robert Elliott and Dr Ivan Guo have been awarded an ARC Discovery grant worth \$369,000 to study ‘Liquidity in financial markets’. This project aims to develop a theory which models the effect of liquidity on option prices under different market conditions. Economic or financial crises are inevitable and affect economics. During or after a major financial crisis, market liquidity usually becomes risky and needs to be studied. Through both empirical and theoretical explorations, this project will quantify and measure liquidity risk and its effect

on the options markets. It will develop a framework to help market regulators manage illiquidity, enhance the efficiency of option trading in illiquid markets and help in the detection of market manipulation.

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## Appointments, departures and promotions

### Australian National University

- Dr Han Xiaolong departed on 19 September 2016.

### Curtin University

#### *New staff:*

- Dr Fabrizio Padula, Research Assistant for Lorenzo Ntogramatzidis. He comes from the University of Brescia, Italy. Dates: 1 March 2016 to 31 August 2018.
- Dr Min Zhang, Research Assistant for Professor Jie Sun. She comes from Tianjin University. Dates: 1 August 2016 to 31 July 2017,

#### *Staff Promotions:*

- Dr Lorenzo Ntogramatzidis has been promoted to Associate Professor.
- Dr Heather Lonsdale has been promoted to Senior Lecturer.

### Flinders University

- Jerzy Filar is leaving to take up a position at the University of Queensland.

### Monash University

#### *New staff (Lecturers):*

- Dr Tiangang Cui
- Dr Kengo Deguchi
- Dr Janosch Rieger

#### *New staff (Postdoctoral Fellows):*

- Dr Shuhao Sun
- Dr Eric Zhou
- Dr Binh Nguyen
- Sr Sarah Jabbari

### RMIT University

- Professor Kathy Horadam FAustMS FICA has been awarded the title of Emeritus Professor of RMIT University. She retired from the University on 1 September 2016 after 31 years service with RMIT, with earlier appointments held over nine years at the University of Melbourne, Monash University and Murdoch University.

### Swinburne University

- Dr Birgit Loch has been promoted to Professor.

- Dr Birgit Loch has resigned to accept a Chair in teaching and learning at La Trobe University.
- Manmohan Singh will be retiring at the end of November.
- Joe Sampson will be retiring at the end of December.

### University of Adelaide

- Dr Ben Binder has been promoted to Associate Professor.
- Dr Pedram Hekmati, who was at Adelaide from 2010 to 2015 and then at Instituto Nacional de Matemática Pura e Aplicada (IMPA) in Brazil, has been appointed to a continuing Senior Lectureship at the University of Auckland.
- Professor John Rice has been appointed to an Adjunct Professorship. John is Executive Director of the Australian Council of Deans of Science.

### University of Melbourne

#### *New staff:*

- Dr Jing Fu (Research Fellow)
- Dr Jason Polak (Research Fellow)
- Dr Thomas Wong (Research Fellow)
- Dr Serena Dipierro (Lecturer)
- Associate Professor Enrico Valdinoci (Associate Professor)

### University of Queensland

- Jerzy Filar, currently at Flinders University, will commence on 1 December 2016 as Director of CARM, the Centre for Applications in Natural Resource Mathematics. Jerzy is a broadly trained applied mathematician with research interests spanning a wide spectrum of both theoretical and applied topics in Operations Research, Optimisation, Game Theory, Applied Probability and Environmental Modelling. He spent the first 13 years of his academic career in the US, which included appointments at the University of Minnesota, The Johns Hopkins University and the University of Maryland and long-term consulting for the Environmental Protection Agency in Washington, DC. He returned to Australia in 1992 where he first worked at the University of South Australia and later at Flinders. He is the editor-in-chief of Springer's Environmental Modelling and Assessment. Jerzy is also a Fellow of the Australian Mathematical Society. He has supervised, or co-supervised, to completion 22 PhD students who are working in various universities, industries and research institutions in Australia, USA, UK, China, Morocco and France. As a hobby he dabbles in writing science.
- Sam Kault has joined UQ as a lecturer, teaching a second-year course in Calculus and Linear algebra. Sam completed his PhD in 2013 in mathematical physics (Parafermions and Bosonization), and was supervised by Associate Professor Yao-Zhong Zhang. Currently Sam is fairly teaching-focused, but his main research interest is Conformal Field Theory.

- Dr Dietmar Oelz has been appointed as Lecturer in Applied Mathematics. He comes from the Courant Institute of Mathematical Sciences at New York University where he was a research associate in Mathematical Biology. His PhD studies at the University of Vienna in Austria included extended research stays in Buenos Aires and in Paris. Later on, Dietmar took positions at the University of Vienna, the Austrian Academy of Sciences and at UC Davis. In 2013 he won an Erwin Schroedinger Fellowship of the Austrian Science Fund. Dietmar's background is in Mathematical Modeling and Simulation as well as in Partial Differential Equations. His research interests are in Mathematical and Computational Cell Biology focusing on topics such as cell movement, cell shape and intra-cellular transport.
- Sergio Galindo-Torres has recently being appointed to a joint position as a lecturer in Applied Mathematics and a Research Scientist at the School of Civil Engineering at the University of Queensland. He is also the recipient of an Advance Queensland Fellowship for his research on numerical methods applied to industry. His career combines three disciplines: He has a BSc degree and PhD in computational physics; his research has focused mainly on the creation of novel algorithms applied particularly to Civil and Environmental Engineering, and recently he has achieved his longstanding dream of securing an academic position at UQ's School of Mathematics where he teaches partial differential equations. Connecting these three areas is the incredible power of mathematics, which he believes can be used to gain insight and predict the evolution of any physical process. Currently, he supervises/co-supervises 11 PhD students (one graduated). Additionally, he has contributed in securing, both individually and as part of a research team, more than \$2M in research funding from different sources, including the Australian Research Council, Queensland Government, and the private sector.
- Yu Mei has commenced as a PostDoctoral Fellow with Min Chun Hong, after completing undergraduate studies in Mathematics at Northwest University in China from 2007 to 2011, followed by an MPhil(2011–2013) and a PhD (2013-2016) in Mathematics at the Chinese University of Hong Kong. Main research interests lie in nonlinear partial differential equations from fluid dynamics including Navier–Stokes equations, Euler equations and Liquid Crystal systems, but also include free boundary and asymptotic limits problems in fluid mechanics, in particular surface waves and boundary layer theory.
- Wen-Hsi Yang is a Postdoctoral Fellow working in the Centre for Application in Natural Resource Mathematics (CARM) since June 2016. His research is in statistical analysis, modelling and theory for spatial, temporal and spatio-temporal data. Currently he is working with people in the Department of Agricultural and Fisheries of the Queensland Government and also with Professor Kaye Basford.
- Kaleb Leemaqz is a Post Doctoral Fellow working with Professor Geoff McLachlan, specifically on optimizing computationally intensive statistical algorithms.

### University of Technology Sydney

This year has seen or will see the departure of six staff members, including three former Heads of School and four staff with a combined century of service:

- Ed Lidums (Lecturer) retired in March 2016.
- Tim Langtry (Associate Professor and former Head of School) retired in July 2016.
- Beverley Moore (Senior Lecturer and former Head of School) retired in July 2016.
- Davy Wong (Lecturer) retired in July 2016.
- Steve Bush (Senior Lecturer) left for a position as Senior Statistician at the Commonwealth Bank in September 2016.
- Debbie Street (Professor of Statistics and former Head of School) is set to leave the Maths group at UTS for a research chair at the university's Centre for Health Economics Research and Evaluation (CHERE).
- Layna Groen (Senior Lecturer) retired in July 2016.

### University of Western Australia

- Professor Snezhana Abarzhi joined in early September as Professor of Applied Mathematics.

### University of Wollongong

- Dr Andrew Zammit Mangion has been appointed as a continuing Senior Lecturer in statistics.

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## New Books

### University of Queensland and University of the Sunshine Coast

Makar, K., Dole, S., Visnovska, J., Goos, M., Bennison, A. and Fry, K. (eds) (2016). *Research in Mathematics Education in Australasia 2012–2015*. Springer, Singapore. ISBN 978-981-10-1417-8, ISBN 978-981-10-1419-2 (eBook).

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## Conferences and Courses

Conferences and courses are listed in order of the first day.

### W-Algebras

Dates: Monday 28 November 2016 to Friday 2 December 2016

Venue: University of Melbourne

Web: <https://sites.google.com/site/ausrepththeory/workshop2016>

For further details, please see the website or *Gazette* 43(3) p. 213.

**BioInfoSummer 2016**

Dates: 28 November to 2 December 2016

Venue: The University of Adelaide

Web: <http://http://bis.amsi.org.au/>

The full program for the AMSI BioInfoSummer 2016 is now available on our website, and features an exciting range of planned activities. This year's event includes lectures from international guest speakers, academic researchers, and industry professionals, specialised workshops including computer and wet labs, a poster session, programming competition, public lecture, Women in STEM networking event and a COMBINE careers panel session.

This year's event is hosted by the University of Adelaide from 28 November to 2 December and will feature the following speakers (plus many more):

- Associate Professor Orly Alter, The University of Utah
- Dr Simon Anders, Institute for Molecular Medicine Finland
- Dr Thomas Conway, IBM Research Australia
- Dr Melissa Davis, The University of Melbourne
- Associate Professor Mingyao Li, University of Pennsylvania
- Professor Terry Speed, The Walter and Eliza Hall Institute of Medical Research
- Associate Professor Xia Yang, University of California, Los Angeles

*Featured speaker*

Dr Mingyao Li, Statistical issues in single-cell RNA sequencing analysis

Dr Mingyao Li obtained her PhD in Biostatistics from the University of Michigan in 2005. Her main research area is statistical genetics and genomics, bioinformatics, and computational biology, which is applicable to cardiometabolic diseases (such as coronary artery disease, heart failure) and eye diseases (including age-related macular degeneration). Recently, Dr Li has expanded her interests from traditional statistical genetics to statistical genomics and bioinformatics, and single-cell transcriptomics.

Talk abstract: <http://bis.amsi.org.au/mingyao-li-2016/>

For further details, please see the website or contact us at [bioinfosummer@amsi.org.au](mailto:bioinfosummer@amsi.org.au).

**MATRIX: Interactions between topological recursion, modularity, quantum invariants and low-dimensional topology**

Dates: 28 November to 23 December 2016

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/interactions-between-topological-recursion-modularity-quantum-invariants-and-low-dimensional-topology/>

*Associated events:*

- Quantum Invariants and Low-dimensional Topology  
14–17 December 2016
- Topological Recursion and Modularity  
19–23 December 2016

For further details, please see the website or *Gazette* 43(1) p. 69.

**Maths Fest Australia 2016**

Dates: 28 November to 16 December 2016

Venue: Canberra

Web: <http://maths.anu.edu.au/events/austms-meeting-2016>

## Incorporating

- Advances in Ergodic Theory, Hyperbolic Dynamics, and Statistical Laws  
Dates: 28 November to 2 December 2016
- 60th Annual Meeting of the Australian Mathematical Society  
Dates: 5–8 December 2016  
Venue: The Australian National University
- Nonlinear and Geometric Partial Differential Equations  
Dates: 9–13 December 2016

Registration for all three events is now open at the website.

Further details and links for these three events are listed here in chronological order.

**Advances in Ergodic Theory, Hyperbolic Dynamics & Statistical Laws**

Dates: 28 November to 2 December 2016

Venue: ANU, Canberra

Web: <http://mathsfest.amsi.org.au/advances-ergodic-theory-hyperbolic-dynamics-statistical-laws/>

A component of Maths Fest Australia 2016. For further details, please see the website or *Gazette* 43(2) p. 148.

**Tools and Mathematics: Instruments for Learning**

Dates: 29 November to 1 December 2016

Venue: Lecture theatre ELI 122, University of Newcastle Sydney Campus,  
55 Elizabeth Street in the Sydney CBD

Web: <https://carma.newcastle.edu.au/meetings/tools/>

This workshop will now include a remote panel chaired by Dame Celia Hoyles and Dr Elena Prieto, 4–6pm Wednesday 30 November. Panel title: ‘Changing the way people think, move and feel mathematically: the contribution of digital technologies’.

Panel members:

- Celia Hoyles

- Elena Prieto
- Paul Drijvers
- Richard Noss
- Ulrich Kortenkamp

The meeting celebrates the publication of *Tools and Mathematics: Instruments for Learning* by the late Professor Jonathan Borwein with coauthors Professor John Monaghan and Professor Luc Trouche (<http://www.springer.com/in/book/9783319023953>).

Plenary speakers:

- John Monaghan
- Luc Trouche
- Michael Assis
- Michael Barnsley
- Naomi Borwein
- Also by video, Uri Wilensky

Registration:

<https://www.eventbrite.com.au/e/tools-and-mathematics-instruments-for-learning-tickets-27424446257>

Further information on the book, abstract submission, and confirmed invited speakers is available on the conference website. Please pass this call for abstracts on to colleagues in your networks who may be interested.

Organisers: Judy-anne Osborn and Naomi Borwein.

### **Workshop on Integrable Systems 2016**

Dates: 1–2 December 2016

Venue: University of Sydney

Web: <http://wp.maths.usyd.edu.au/igs/workshops/integrable-systems-2016/>

For further details, please see the website or *Gazette* 43(3) p. 215.

### **Early Career Researchers Workshop**

Dates: 3–4 December

Venue: Australian Academy of Science, Canberra

Web: <https://carma.newcastle.edu.au/mcoons/ECW2016.html>

This year, the Early Career Researchers Workshop will be precede the AustMS meeting in Canberra. The theme of this year's ECW will be 'Addressing your audience'. See the website for more information.

### **Workshop on Data Assimilation**

Dates: 5–9 December 2016

Venue: Bureau of Meteorology Head Office, Melbourne

Website: <http://www.bom.gov.au/research/workshop/2016/index.html>

For further details, please see the website or *Gazette* 43(4) p. 261, or contact Ms V. Jemmeson (v.jemmeson@bom.gov.au).

**23rd Australian Statistical Conference 2016 in conjunction with 14th Australasian Data Mining Conference (AusDM) and 9th Australian Conference on Teaching Statistics (OZCOTS)**

Dates: 5–9 December 2016  
Venue: Hotel Realm, Canberra  
Website: [www.asc2016.com.au](http://www.asc2016.com.au)

For further details, please see the website or *Gazette* 43(1) p. 69.

**60th Annual Meeting of the Australian Mathematical Society**

Dates: 5–8 December 2016  
Venue: Canberra  
Web: <http://maths.anu.edu.au/events/austms-meeting-2016>

Part of Maths Fest Australia 2016. For further details, please see the website.

**Nonlinear & Geometric Partial Differential Equations**

Dates: 9–13 December  
Venue: ANU, Canberra  
Web: <http://research.amsi.org.au/mathsfest-australia-2016/>

Part of Maths Fest Australia 2016. For further details, please see the website or *Gazette* 43(2) p. 149.

**Australasian Conference on Combinatorial Mathematics and Combinatorial Computing (40ACCMCC)**

Dates: 12–16 December 2016  
Venue: University House, The University of Newcastle city campus  
Web: <https://40accmcc.newcastle.edu.au/>

The 40th ACCMCC will follow a similar format to previous conferences in this annual series, which is overseen by the Combinatorial Mathematics Society of Australasia (CMSA) and began in 1972. You can now register for the conference at Eventbrite.

We will have a special session to honour the late Professor Mirka Miller.

Just after the conference, on 16 and 17 of December, we will have a workshop on Applied Probability, Combinatorics and Optimisation at the same venue; see next item.

Invited speakers:

- Nathan Clisby (University of Melbourne)
- Amy Glen (Murdoch University)
- Bojan Mohar (Simon Fraser University)
- Florian Pfender (University of Colorado Denver)

- Dana Randall (Georgia Institute of Technology)
- Bruce Reed (National Institute of Informatics, Tokyo, Japan)
- Benny Sudakov (ETH Zurich)
- Geoff Whittle (University of Wellington)

Chaired by Judy-anne Osborn and Thomas Kalinowski.

### **String Geometries and Dualities: Australia-Brazil meeting**

Dates: 12–16 December 2016

Venue: IMPA, Rio de Janeiro

Web: [www.impa.br/opencms/en/eventos](http://www.impa.br/opencms/en/eventos)

Organizing Committee:

- Henrique Bursztyn (IMPA)
- Reimundo Heluani (IMPA)
- Pedram Hekmati (IMPA)
- Peter Bouwknegt (Australian National University)
- Mathai Varghese (University of Adelaide)

Over the last three decades, string theory has had a profound impact in pure mathematics. The aim of this interdisciplinary conference is to bring together experts to discuss recent developments and investigate new problems and applications in mathematical areas connected to string theory, including generalized geometry, vertex algebras, topological T-duality and related topics. In addition we hope to foster links between Australian and Brazilian researchers, and those with close connections to either party.

### **Applied Probability, Combinatorics and Optimisation (APCO)**

Dates: 16-17 December 2016

Venue: University House, The University of Newcastle city campus

Web: <https://carma.newcastle.edu.au/apco/>

The first workshop on Applied Probability, Combinatorics and Optimisation will be held at the University of Newcastle, right after ACCMCC. There are three confirmed invited speakers:

- Jerzy Filar: Currently Strategic Professor of Mathematics, Flinders University, Australia (From 1 December 2016: Director of the Centre for Applications in Natural Resource Mathematics (CARM), The University of Queensland, Australia)
- Dana Randall: Director of Algorithms and Randomness Center, Georgia Institute of Technology, USA
- Nick Wormald: Australian Laureate Fellow, Monash University, Australia

There will be a limited number of contributed talks at this workshop. If you are interested to deliver your research outcome in these areas at this workshop, please submit your abstract by email to [ali.eshragh@newcastle.edu.au](mailto:ali.eshragh@newcastle.edu.au).

Attendance of the APCO workshop is free, but requires registration through the ACCMCC registration page.

APCO Organising Committee:

- Ali Eshragh (The University of Newcastle)
- Thomas Kalinowski (The University of Newcastle)
- Catherine Greenhill (The University of New South Wales)

### **Differential geometry, Lie theory and Low-dimensional Topology**

Dates: 19–21 December 2016

Venue: La Trobe University

Web: <http://www.gygeom.com/>

For further details, please see the webpage, or *Gazette* 43(3) p. 216.

### **MATRIX: Hypergeometric motives and Calabi-Yau differential equations**

Dates: 8–28 January 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/hypergeometric-motives-and-calabi-yau-differential-equations/>

Participation is by invitation only. For further details, please see the website.

### **AMSI Summer School 2017**

Dates: 9 January to 3 February 2017

Venue: The University of Sydney

Web: <http://ss.amsi.org.au/>

Registration is still open, until 4 December. The AMSI Summer School is a four-week residential school in the mathematical sciences and cognate disciplines. Eight exciting subjects are offered, given by eminent lectures from around Australia, to give you the opportunity to study areas and take credit\* for a subject that may not be available at your home university. The school is primarily for honours and postgraduate students in the mathematical sciences and cognate disciplines, but other students are welcome to apply.

For further details, please see the website.

### **ANZAMP 5th annual meeting**

Dates: 1–3 February 2017

Venue: Kiama, NSW

Web: [www.anzamp.austms.org.au/meetings/current/](http://www.anzamp.austms.org.au/meetings/current/)

Registration is now open. The meeting will take place in the popular seaside holiday town of Kiama on the New South Wales South Coast.

The program committee is pleased to announce the full line up of keynote speakers:

- Luis Fernando Alday (Oxford)

- Bernd Krauskopf (Auckland)
- Eric Ragoucy (LAPTh - CRNS)
- Tomohiro Sasamoto (Tokyo Institute of Technology)
- Susan Scott (Australian National University)

The meeting has a tradition of encouraging contributed talks in a wide range of topics in mathematical physics and especially talks from ANZAMP student members who are eligible to compete for the A J Guttmann student talk prize.

ANZAMP is a division of the AustMS so AustMS members and members of societies with reciprocity agreements (e.g. NZMS) can easily join ANZAMP.

For further information, including transport and accommodation information, see the conference website, or contact [anzamp.meeting@gmail.com](mailto:anzamp.meeting@gmail.com).

### **ANZIAM 2017**

Dates: 5–9 February 2017

Venue: Adelaide Hills Convention Centre, Hahndorf, SA

Web: [www.maths.adelaide.edu.au/anziam2017](http://www.maths.adelaide.edu.au/anziam2017)

Registration is now open at the conference website, where you can find further details, including accommodation. Please note the following deadlines:

- Early-bird registration closes: 16 December 2016
- Abstract submission closes: 12 January 2017

You are strongly advised to book your accommodation by the early-bird deadline. The majority of the available accommodation in Hahndorf is being held for ANZIAM 2017 at special rates until this date, after which it will be released for booking by the general public. Hahndorf is a South Australian tourist destination and there is, in general, high demand for the accommodation throughout the year, including at the time of the conference. If you cannot secure accommodation in Hahndorf you will need to obtain accommodation in Adelaide or elsewhere and commute by public transport or car. Please follow the instructions given on the accommodation webpage in order to receive the special conference prices.

The Mathematical Biology Special Interest Group is holding a one-day workshop on the Friday following ANZIAM, 10 February, while the MISG 2017 will be held in the next week 13–17 February. See under ‘Associated Events’ on the ANZIAM 2017 website.

### **Remembrance Day**

*Dedicated to the memory of Professor Jonathan Michael Borwein*

Date: 10 February 2017

Venue: Institut Henri Poincaré, Paris

Web: <https://carma.newcastle.edu.au/meetings/remembranceday/>

The Society’s Steering Committee has agreed to sponsor the meeting and encourages members to attend.

### Speakers

- David H. Bailey (Lawrence Berkeley National Laboratory)
- Patrick Combettes (North Carolina State University)
- Ivar Ekeland (University Paris-Dauphine)
- Martin Grötschel (Berlin-Brandenburgische Akademie der Wissenschaften)
- Adrian S. Lewis (Cornell University)
- Luc Trouche (Ecole Normale Supérieure, Lyon)
- Qiji Jim Zhu (Western Michigan University)
- Matthew K. Tam (University of Göttingen and CARMA)
- F.J. Aragón Artacho (University of Alicante and CARMA)
- Alexander Ioffe (Technion)

Please contact Professor Michel Théra ([michel.thera@unilim.fr](mailto:michel.thera@unilim.fr)) if you have any questions.

### **HDA2017, 7th Workshop on High-Dimensional Approximation**

Dates: 13–17 February 2017

Venue: UNSW

Web: <http://www.hda2017.unsw.edu.au>

For further details, please see the website or *Gazette* 43(3) pp. 217–218.

### **Mathematics in Industry Study Group 2017**

Dates: 13–17 February 2017

Venue: University of South Australia

Web: <http://mathsinindustry.com/2017/misg-2017/>

Registration (free) is now open for MISG 2017, one of the world's longest running mathematics think-tanks. As usual, we expect four to six exciting industry projects for participants to work on; details will be progressively added to the website. The workshop is an ideal opportunity to make contact and forge partnerships with Australian and New Zealand industries, and to collaborate with other mathematicians, scientists and engineers.

We are looking for industry problems to tackle at MISG 2017. Please contact the MISG Director, A/Prof Peter Pudney ([Peter.Pudney@unisa.edu.au](mailto:Peter.Pudney@unisa.edu.au)), if you have a problem you would like us to look at, if you have industry contacts that may be interested, or if you have any questions about MISG.

### **Applied Probability @ the Rock**

Dates: 17–21 April 2017

Venue: Ayers Rock Resort

Web: <http://www.maths.adelaide.edu.au/APatR/>

For further details, please see the website or *Gazette* 43(3) p. 218.

**MATRIX: Integrability in Low-Dimensional Quantum Systems**

Dates: 11–23 June 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/computational-inverse-problems/>

Registration is by invitation only. For further details, please see the website.

**MATRIX: Integrability in Low-Dimensional Quantum Systems**

Dates: 26 June to 21 July 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/integrability-in-low-dimensional-quantum-systems/>

Registration is by invitation only. For further details, please see the website.

**Harmonic Analysis and PDE**

Dates: 17–21 July 2017

Venue: Macquarie University

Web: <http://research.amsi.org.au/events/event/harmonic-analysis-pde/>

Harmonic Analysis and Partial Differential Equations (PDEs) have important roles in fundamental and applied mathematical research with extensive applications to other research fields such as complex analysis, mathematical modelling, signal processing, medical imaging.

This workshop, organised on the occasion of Professor Xuan Duong turning 60 in 2017, will bring the leading experts from all over the world, including USA, Europe, China, Japan, to Australia to be together with Australian experts as well as early career researchers and PhD students. The reports to be presented will be the most recent significant developments and future directions of Harmonic Analysis and PDEs. The workshop will also provide time and ample opportunities for discussions, research collaborations for the participants, and foster potential collaborations in the future.

**28th International Workshop on Combinatorial Algorithms**

Dates: 17–21 July 2017

Venue: Newcastle

Web: <https://carma.newcastle.edu.au/meetings/iwoca/>

This is a very special IWOCA, dedicated to the memory of Professor Mirka Miller. For further details, please see the website.

**12th International Conference on Fixed Point Theory and its Applications**

Dates: 24–28 July 2017

Venue: Harbourview Function Centre, Newcastle

Web: <https://carma.newcastle.edu.au/meetings/icfpta/>

Dedicated to the memory of Jonathan M. Borwein in recognition of his prodigious contributions to nonlinear analysis.

Celebrating William (Art) Kirk's 80th birthday and the 70th birthday of Brailey Sims.

The purpose of ICFPTA 2017 is to bring together leading experts and researchers in fixed point theory and to assess new developments, ideas and methods in this important and dynamic field. A special emphasis will be put on applications in related areas, as well as other sciences, such as the natural sciences, medicine, economics and engineering.

The conference will continue the tradition of the previous fixed point theory meetings which were held in Marseille (1989), Halifax (1991), Seville (1995), Kazimierz Dolny (1997), Haifa (2001), Valencia (2003), Guanajuato (2005), Chiang Mai (2007), Changhua (2009), Cluj-Napoca (2012) and Istanbul (2015).

**MATRIX: Elliptic Partial Differential Equations of Second Order: celebrating 40 years of Gilbarg and Trudinger's book**

Dates: 16–28 October 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/elliptic-differential-equations-of-second-order/>

Registration is by invitation only. For further details, please see the website.

**MATRIX: Combinatorics, Statistical Mechanics, and Conformal Field Theory**

Dates: 29 October to 18 November 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/combinatorics-statistical-mechanics-and-conformal-field-theory/>

Registration is by invitation only. For further details, please see the website.

**Mathematics of Risk**

Date: 20 November to 8 December 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/mathematics-of-risk/>

Registration is by invitation only. For further details, please see the website.

Incorporating workshop on mathematical modelling of risk and contiguous topics.

Date: 27 November to 1 December 2017

Venue: as above.

**Tutte Centenary Retreat**

Dates: 26 November to 2 December 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/tutte-centenary-retreat/>

Registration is by invitation only. For further details, please see the website.

**AustMS 2017: 61st Annual Meeting**

Dates: 11–14 December 2017

Venue: Macquarie University

Further details to come.

**Geometric R-matrices**

Dates: 17–22 December 2017

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/geometric-r-matrices/>

Registration is by invitation only. For further details, please see the website.

**Non-equilibrium Systems and Special Functions**

Dates: 7 January to 2 February 2018

Venue: University of Melbourne, Water Street, Creswick, Victoria

Web: <http://www.matrix-inst.org.au/events/non-equilibrium-systems-and-special-functions/>

Registration is by invitation only. For further details, please see the website.

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**Vale****Wendy Robertson**

With regret we inform members of the death on Friday 19 November of Dr Wendy Robertson, formerly of the University of Western Australia.

Wendy and her husband Alex Robertson jointly authored the influential book *Topological Vector Spaces* in 1964 (republished in 1973, and translated into both German and Russian).

Cheryl Praeger writes

Lady Jefferies from Girton College Cambridge, where Wendy did her undergraduate studies and her PhD, told me she regarded Wendy as ‘her best student’.

Wendy was always very supportive of younger members of staff. She came to Perth from Glasgow in 1973 when her husband Alex accepted the position of Foundation Professor of Mathematics at Murdoch University. Wendy was appointed then to a senior lectureship at UWA.

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### Visiting mathematicians

Visitors are listed in alphabetical order and details of each visitor are presented in the following format: name of visitor; home institution; dates of visit; principal field of interest; principal host institution; contact for enquiries.

- Prof Tomoyuki Arakawa; Research Institute of the Mathematical Sciences, Japan; 22 November to 4 December 2016; UOM; Arun Ram
- Prof Harry Braden; University of Edinburgh; 29 November to 3 December 2016; applied; USN; Nalini Joshi
- Dr Brenton Clarke; Murdoch University; 20 August to 31 December 2016; UWA; Berwin Turlach
- Ms Giulia dal Verme; Università degli Studi di Milano-Bicocca, Milano, Italy; 15 September to 14 December 2016; pure; USN; Jacqui Ramagge
- Dr Geoffrey Decrouez; Higher School of Economics, Russia; 4 November to 19 December 2016; UOM; Peter Taylor
- Prof Reinier Díaz Millán; Federal Institute of Goias, Goiania, Brazil; 1 January 2016 to 31 December 2016; optimization, variational inequality problem, inclusion problem, splitting methods; USA; Regina Burachik
- Asen Dontchev; Mathematical Reviews; 10–22 January 2017; optimisation; FDU; Alex Kruger
- Dr Caley Finn; Université Savoie Mont Blanc, France; 28 November to 16 December 2016; UOM; Jan De Gier
- Prof Edwin Galea; University of Greenwich (UK); 23 November to 3 December 2016; computational emergency engineering; RMIT; Marc Demange
- Dr Richard Garner; Macquarie; 23 January to 3 February 2017; pure; USN; Anthony Henderson
- Ms Carina Geldhauser; Weierstrass, Institute for Applied Analysis and Stochastics, Berlin; 2 November to 3 December 2016; UOM; Enrico Valdinoci
- Dr Zhao Hua Gong; Shandong Institute of Business and Technology; January 2016 to January 2017; optimal control and its applications; CUT; Ph: 92663534
- Dr Paul Griffiths; Oxford Brookes University; 3–25 January 2017; pure; USN; Sharon Stephen
- Dr Jeremie Guilhot; 10–22 December 2016; pure; USN; James Parkinson
- Mr Cheng Hu; Shandong University; 1 June to 31 December 2016; statistics; USN; Qiying Wang
- Dr Hsin-Cheng Huang; Academia Sinica, Taiwan; 28 November to 2 December 2016; spatial and environmental statistics; UOW; Noel Cressie
- Prof Gerhard Huisken; 16–22 December 2016; pure; USN; Zhou Zhang
- Dr Ingrid Irmer; Florida State University; 10 October to 31 December 2016; UOM; Craig Hodgson
- Prof Monique Jeanblanc; Universite d'Evry; 23 November to 20 December 2016; financial maths; USN; Marek Rutkowski
- Prof Bertrand Jouve; CNRS (France); 10 November to 6 December; graph theory and complex networks; RMIT; Marc Demange
- Dr Shashank Kanade; University of Alberta, Canada; 20 November to 3 December 2016; UOM; David Ridout

- Dr Napsu Karmita; Turku University, Finland; 2 January to 24 December 2016; optimisation; FDU; Adil Bagirov
- Dr DE Zhou Kong; Shandong Agricultural University; February 2016 to February 2017; CUT; applied differential equations contact; Ph: 92663534
- Prof Tony Krzesinski; University of Stellenbosch, South Africa; 18 November to 21 December 2016; UOM; Peter Taylor
- A/Prof Nicole Lemire; University of Western Ontario; 30 January to 16 April 2017; pure; USN; Gus Lehrer
- A/Prof Jingjian Li; Guangxi University P.R. China; January 2016 to January 2017; UWA; Cai Heng Li
- Professor Chong Yang Liu; Shandong Institute of Business and Technology; January 2016 to January 2017; CUT; optimal control and its applications; Ph: 92663534
- Dr Yong Liu; Wuhan University of Science and Technology; June 2016 to June 2017; CUT; applied finance and economics; Ph: 92663534
- Dr Xia Liu; Henan Normal University, China; 1 September 2016 to 31 August 2017; SUT; applied mathematics, dynamical systems; Tonghua Zhang
- A/Professor De Xiang Ma; North China Electric Power University; March 2016 to March 2017; CUT; applied differential equations; Ph: 92663534
- Prof Jose Mazon; University of Valencia; 2–22 December 2016; pure; USN; Daniel Hauer
- Dr Jin Song Meng; University of Electronic Science and Technology China; January 2016 to January 2017; CUT; optimal control and its applications; Ph: 92663534
- Dr Anne Moreau; University of Poitiers, France; 19 November to 4 December 2016; UOM; Arun Ram
- A/Prof Shahar Nevo; Bar-Ilan University; 28 November 2016 to 4 January 2017; applied; USN; Milena Radnovic
- Dr Peter O’Sullivan; University of Sydney; 2 July to 31 December 2016; ANU; Peter Bouwknegt
- Prof Dmitry Pelinovsky; McMaster University; 1 January to 30 June 2018; applied; USN; Nalini Josh
- Prof Dana Randall; Algorithms and Randomness Center, Georgia Institute of Technology; 11–18 December 2016; UNC; Ali Eshragh, Thomas Kalinowski, Sogol Mohammadian and Catherine Greenhill
- Mr James Reoch; Adelaide; 3 August 2015 to 31 December 2017; applied; USN; Peter Sehoon Kim
- Mr Gerben Scheepmaker; TU Delft; 3–20 January 2017; energy-efficient train control; USA; Amie Albrecht
- Mr Yu Shen; Tongji University; 1 December 2016 to 30 April 2017; stats; USN; Qiyang Wang
- A/Prof Scott Sisson; UNSW; 9 January to 3 February 2017; stats; USN; Anthony Henderson
- Mr Moritz Thon; 3 September to 25 November 2016; applied; USN; Mary Myerscough
- Prof Walter Tholen; York University, Toronto, Canada; 29 November to 11 December 2016; category theory; MQU; Ross Street

- Prof Dom Verity; Macquarie; 9–20 January 2017; pure; USN; Anthony Henderson  
Mr Søren Vilsen; University of Aalborg, Denmark; 1 August to 31 December 2016;  
UMB; David Balding
- A/Prof Begoña Vitoriano; Complutense University, Madrid, Spain; 21 November  
to 20 December 2016; disaster management; RMIT; GEO-SAFE project, Marc  
Demange
- Ms Jun Wang; University of Science and Technology of China; 1 October 2015 to  
1 March 2017; ANU; Ben Andrews
- Ms Pei Wang; Central South University, China; July 2016 to June 2018; CUT;  
stochastic optimisation; Ph: 92663534
- Ms Wei Wang; Hunan University of Technology; April 2016 to February 2017;  
CUT; stochastic optimal control and optimization; Ph: 92663534
- Dr Simon Wood; 20 August 2016 to 31 December 2017; ANU; Peter Bouwknecht  
Dr Jeroen Wouters; 25 February 2015 to 24 February 2017; applied; USN; Georg  
Gottwald
- Dr Ying Xu; Hefei University of Technology; 1 September 2015 to 31 August 2017;  
pure; USN; Ruibin Zhang
- Dr Oded Yacobi; University of Sydney; 22 November to 4 December 2016; UOM;  
Arun Ram
- Prof Yasuhito Yamada; Kobe University; 27 November to 3 December 2016; ap-  
plied; USN; Nalini Joshi
- A/Prof Hengyun Yang; Shanghai Maritime University; 16 January 2016 to 15 Jan-  
uary 2017; pure; USN; Ruibin Zhang
- A/Professor Yanyan Yin; Jiangnan University, Wuxi, China; March to Dec 2016;  
CUT; control and optimization of stochastic systems with actuator satura-  
tion; Ph: 92663534
- Dr Jin Long Yuan; Dalian University of Technology; January 2016 to January 2017;  
CUT; optimal control and its application to bio-processes; Ph: 92663534
- Dr Seif Zeinabolsadat; Eram University, Iran; January 2016 to January 2017; CUT;  
optimisation; Ph: 92663534
- Dr Hong-Bing Zeng; Hunan University of Technology; March 2016 to February  
2017; CUT; sampled-data synchronization control for chaotic neural networks  
under actuator saturation; Ph: 92663534
- Prof Da-jun Zhang; Shanghai University; 28 November to 4 December 2016; ap-  
plied; USN; Nalini Josh
- Mr Yang Zhang; University of Science and Technology, China; 1 October 2015 to  
30 September 2017; pure; USN; Ruibin Zhang
- Prof Jiandong Zhao; Ludong University, China; 1 June to 30 November 2016; dif-  
ferential equations and mathematical biology; SUT; Tonghua Zhang
- Hui Zhou; Peking University, PRC; September 2015 to March 2017; UWA; Cheryl  
Praeger, Alice Devillers and Michael Giudici
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