

## Monday December 5, 2011

10:00-17:00	Number Theory Satellite Meeting Engineering 403-404
17:00-20:00	Registration and welcome reception Engineering foyer Food and drinks from 18:00 Sponsor: New Zealand Institute of Advanced Study

## Tuesday December 6, 2011

8:30-9:10	Registration		
9:10-9:15	Opening Remarks		
9:15-10:10  Room 401-401	NZMS Research Award Winner Plenary Lecture <b>Charles Semple</b> <i>Realizing phylogenies with local information</i> (Chair: Marston Conder)		
10:10-10:40	Coffee		
	Modelling natural events (Chair: Philip Sharp) room: 403-404	Topology (Chair: Jiling Cao) room: 403-403	Algebra and graphs (Chair: Jianbei An) room 403-402
10:40-11:05	<b>Mick Roberts</b> <i>Epidemic models with uncertainty</i>	<b>David Holgate</b> <i>Topology in a category - neighbourhood operators</i>	<b>Dimitri Leemans</b> <i>Symmetric groups and polytopes</i>
11:10-11:35	<b>Robert McKibbin</b> <i>Mathematical modelling of volcanic eruption plumes</i>	<b>Sina Greenwood</b> <i>Connected generalised inverse limits</i>	<b>Tim Stokes</b> <i>Comparison semigroups</i>
11:40-12:05	<b>Tammy Lynch</b> <i>The effect of cracks and a steam cap on hydrothermal eruptions</i>	<b>Michael Lockyer</b> <i>Generalised inverse limits of tent maps</i>	<b>Astrid an Huef</b> <i>Algebras associated to higher- rank graphs</i>
	Lunch		

13:30-14:25 Room 401-401	NZIAS Plenary Lecture <b>Alan McIntosh</b> <i>The square root problem of Kato for elliptic operators</i> <i>A survey with emphasis on related first order systems</i> (Chair: Gaven Martin)
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14:25-14:50	Coffee
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	Numerical analysis (Chair: Shixiao Wang) room: 403-404	Analysis (Chair: Iain Raeburn) room: 403-403	Mathematical physics (Chair: Rod Gover) room 403-402
14:50-15:15	<b>John Butcher</b> <i>Dealing with parasitic behaviour in G-symplectic integrators</i>	<b>Anuj Bhowmik</b> <i>Characterizations of Walrasian expectations equilibrium in economies with infinitely many commodities</i>	<b>Graham Weir</b> <i>Variable gravitational and cosmological parameters in General Relativity</i>
15:20-15:45	<b>Gulshad Imran</b> <i>Effective order and symplectic integrators</i>	<b>Igor Klep</b> <i>Values of free noncommutative polynomials and Lie ideals</i>	<b>Matthew Randall</b> <i>Local obstructions to 2-dim projective structures admitting skew-symmetric Ricci tensor</i>

	Dynamics (Chair: Claire Postlethwaite) room: 403-404	Probability (Chair: Jeff Hunter) room: 403-403	Foundations of analysis (Chair: David Gauld) room 403-402
15:55-16:20	<b>Pablo Aguirre</b> <i>Both sides of the story: turning a cylinder into a Möbius strip (and vice versa) at homoclinic flip bifurcations</i>	<b>Mark Holmes</b> <i>Percolation without coffee</i>	<b>Maarten McKubre-Jordens</b> <i>Constructing weak solutions of the Dirichlet problem</i>
16:25-16:50	<b>Stefanie Hittmeyer</b> <i>Interacting invariant sets in a 2D noninvertible map model of wild chaos</i>	<b>William Newman</b> <i>Independent random events and the appearance of order: clustering, hierarchy formation and universal scaling</i>	<b>Alexander Melnikov</b> <i>Isometric computability structures on metric spaces</i>

17:00-18:00	NZMS and Colloquium AGM Room 401-401
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18:20-18:30	An invitation to a radical idea ( $\sqrt{2} < x < I$ , where $\text{Rad}(I) = I$ ) <b>Bill Barton</b>
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18:30-21:00	Reception Sponsor: NZIMA Engineering foyer
18:45-19:30	Poster session Engineering foyer

## Wednesday December 7, 2011

9:10-10:05  Room 401-401	Plenary Lecture <b>Kiran Kedlaya</b> <i>The Sato-Tate conjecture for elliptic and hyperelliptic curves</i> (Chair: Steven Galbraith)
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10:05-10:30	Coffee
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	Numerical analysis (Chair: Bernd Krauskopf) room: 403-404	Applied algebra & number theory (Chair: Ben Martin) room: 403-403	Analysis (Chair: Astrid an Huef) room 403-402
10:30-10:55	<b>Philip Sharp</b> <i>Optimal extended explicit            Pouzet Runge-Kutta pairs            for Volterra integral            equations of the second kind</i>	<b>Edoardo Persichetti</b> <i>Coding theory and cryptography:            New perspectives</i>	<b>Tom ter Elst</b> <i>Partial Gaussian bounds for            degenerate differential            operators</i>
11:00-11:25	<b>Muhammad Amer Qureshi</b> <i>High order explicit Runge-            Kutta Nystrom pairs</i>	<b>Kevin Byard</b> <i>A class of combinatorial arrays            with good correlation properties</i>	<b>Manfred Sauter</b> <i>A weak trace for Sobolev            functions on rough domains</i>

	Num analysis and dynamics (Chair: Steve Taylor) room: 403-404	Applications of combinatorics (Chair: Dimitri Leemans) room: 403-403	Analysis and number theory (Chair: Kevin Broughan) room 403-402
11:30-11:55	<b>Saghir Ahmad</b> <i>Efficient solution of stiff            problems using Radau IIA            and other methods</i>	<b>Christopher Tuffley</b> <i>Scheduling matches to allow            shared transport, or How to get            free tickets to your local team's            home games</i>	<b>Robert Akscyn</b> <i>On the number of composites            less than a given magnitude</i>
12:00-12:25	<b>Winston Sweatman</b> <i>Dynamics of some few-body            problems with symmetry</i>	<b>Joshua Collins</b> <i>Constructing phylogenetic            networks</i>	<b>Shaun Cooper</b> <i>Development of elliptic            functions according to            Ramanujan</i>

12:30-13:30	Lunch ANZIAM AGM Room: 401-401
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13:30-14:25  Room 401-401	Plenary Lecture <b>John Mason</b> <i>Making Connections: shadows, crossed ladders, couriers, Ceva and parallel sums</i> (Chair: Bill Barton)
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	Mathematical biology (Chair:Graham Donovan) room: 403-404	Convection in porous media (Chair: Robert McKibbin) room: 403-403	Topology and analysis (Chair: Sina Greenwood) room: 403-402	Mathematics education (Chair: Judy Paterson) room: 403-401
14:30-14:55	<b>Shawn Means</b> <i>Realistic geometry for modeling: An Acinar salivary gland</i>	<b>Amjad Ali</b> <i>Modelling pollution transport in phreatic aquifers</i>	<b>Jiling Cao</b> <i>Bornologies and hyperspaces</i>	<b>Mary Beisiegel</b> <i>Preparing future mathematicians for teaching tertiary math</i>
15:00-15:25	<b>Kate Patterson</b> <i>A mathematical model of the salivary duct</i>	<b>Donald Nield</b> <i>Modelling convection in porous media: Some current developments</i>	<b>Ittay Weiss</b> <i>Metric 1-spaces</i>	<b>Bill Barton</b> <i>Videoing lectures research: Where it has taken me</i>

	Free afternoon
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18:00-22:00	Drinks and Conference Dinner (Dinner starting 7:00pm) Tamaki Yacht Club
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### Thursday December 8, 2011

9:10-10:05  Room 401-401	ANZIAM Plenary Lecture <b>Graeme Wake</b> <i>Mathematics in Medicine: Enhancing your health</i> (Chair: Alona Ben-Tal)
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10:05-10:30	Coffee
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	Industrial mathematics (Chair: Winston Sweatman) room: 403-404	Number theory (Chair: Shaun Cooper) room: 403-403	Analysis (Chair: Tom ter Elst) room 403-402
10:30-10:55	<b>Vitali Babakov</b> <i>Initial stage of mass flow through a plane hopper</i>	<b>Heung Yeung Lam</b> <i>On the Diophantine equation <math>n^2 = x^2 + by^2 + cz^2</math></i>	<b>Iain Raeburn</b> <i>Toeplitz algebras of semigroups</i>
11:00-11:25	<b>Hyuck Chung</b> <i>Computation of the surge motion of a floating elastic plate</i>	<b>Ali Jaballah</b> <i>The spectrum of a maximal non-integrally closed domain</i>	<b>Sanjiv Kumar Gupta</b> <i>Asymmetry of multipliers on Lie groups</i>

	PDEs (Chair: Don Nield) room: 403-404	Markov models (Chair: Mark Holmes) room: 403-403	Analysis (Chair: Igor Klep) room: 403-402	Mathematics Education (Chair: Bill Barton) room: 403-401
11:30-11:55	<b>Bruce van Brunt</b> <i>Probability density function solutions to a Bessel type pantograph equation</i>	<b>Ivo Siekmann</b> <i>Identity slip-Algebraic problems in aggregated Markov models</i>	<b>Peter Donelan</b> <i>Hyperbolic pseudo-inverses and the Euclidean group</i>	<b>Chris Sangwin</b> <i>Automatic assessment of mathematics with Maxima</i>
12:00-12:25	<b>Shixiao Wang</b> <i>Rotational flow stability: from Rayleigh's theory to the non-linear theory</i>	<b>Guanghua Lian</b> <i>Consistent modeling of SPX and VIX options: Efficient evaluation in Gatheral's three-factor model</i>	<b>Patrick Ion</b> <i>Geometry and the discrete Fourier transform</i>	<b>Bill McCallum</b> <i>Klein vignettes</i>

12:30-13:30	Lunch
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	Optimisation and combinatorics (Chair: Peter Donelan) room: 403-404	Modelling (Chair: John Butcher) room: 403-403	Geometry and AMS standards (Chair: Ernie Kalnins) room 403-402
13:30-13:55	<b>Alastair McNaughton</b> <i>Lagrange optimization of quartic forms</i>	<b>Jiří Kunovský</b> <i>Parallel computations based on numerical integration methods</i>	<b>Ben Whale</b> <i>A physically motivated boundary for space-time and its relation to Cauchy completions</i>
14:00-14:25	<b>Ben Martin</b> <i>Lattices in automorphism groups of trees</i>	<b>Dion O'Neale</b> <i>Patents and power law distributions: how to find them, fake them and fudge them</i>	<b>Patrick Ion</b> <i>Mathematics subject classification: The MSC2010 revision and new standards (MathML and SKOS)</i>

14:30-15:25 Room 401-401	Plenary Lecture <b>Hinke Osinga</b> <i>The role of global manifolds in the transition to chaos in the Lorenz system</i> (Chair: Vivien Kirk)
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15:25-15:30	Closing remarks
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