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## News

### Completed PhDs

#### Australian National University:

- Dr Andreas Axelsson, *Transmission Problems for Dirac's and Maxwell's Equations with Lipschitz Type Interfaces*, supervisor: Prof. Alan McIntosh.
- Dr Tamiru Jarso, *Automorphisms Fixing Subnormal Subgroups of Certain Infinite Soluble Groups*, supervisor: Dr John Cossey.
- Dr Mark Maslen, *Exactly Solved Quantum Spin Ladders*, supervisor: Prof. Murray Batchelor.
- Dr Paola Pozzi, *Theoretical Computational Mathematics*, supervisor: Prof. John Hutchinson.
- Dr Christian Rau, *Curve Estimation and Signal Discrimination in Spatial Problems*, supervisor: Prof. Peter Hall.
- Dr Bronwen Whiting, *Boundary Correction Methods for Multivariate Density Estimation*, supervisor: Prof. Peter Hall.
- Dr Jacki Wicks, *On Modelling and Testing for Linkage in Nuclear Families*, supervisor: Prof. Sue Wilson.

#### CSIRO:

- Dr Petra Kuhnert, *New methodology and comparisons for the analysis of binary data using Bayesian and tree based methods*, principal supervisor: Prof. Kerrie Mengersen, associate supervisors: Dr Bill Venables, Prof. Tony Pettitt.

#### Edith Cowan University (School of Engineering and Mathematics):

- Dr Tuyet Tran, *Wavelet Based Simulation of Geological Variables*, supervisors: Dr Ute Mueller and Dr Lyn Bloom.

#### La Trobe University:

- Dr Darren Condon, *The numerical solution of eigenvalue problems for differential operators*, supervisor: Dr Alan Andrew.
- Dr Jonathan Alridge, *The solution to the inverse problem in the calculus of variations*, supervisor: Dr Geoff Prince.
- Dr Apostolos Iatrou, *Integrable Mappings*, supervisor: Dr Katherine Seaton.

#### University of Ballarat:

- Dr David Stratton has been awarded the first University of Ballarat Doctor of Information Technology degree, *A program visualisation meta language*, principal supervisor: Dr Philip Smith, associate supervisors: Dr John Yearwood, Dr John Wharington.

#### University of Melbourne:

- Dr Andrew Rogers, *Parallel algorithms for lattice enumeration problems*, supervisor: Prof. Tony Guttman.
- Dr Benjamin Burton, *Classifying 3-Manifolds: Minimal triangulations on normal surfaces*, supervisor: Prof. Hyam Rubenstein.

- Dr Ling Heng Wong, *Topics on lattice models in statistical mechanics*, supervisors: Prof. Tony Guttmann, Dr Aleks Owczarek and Dr Barry Hughes.

#### University of Western Australia:

- Dr John Bamberg.
- Dr Devin Kilminster.
- Dr Maska Law.
- Dr El-Hirbawy Mahmoud.
- Dr Sacha Roscoe.

### New Books

A.M. Rubinov (Univ. Ballarat) and X.Q. Yang, *Lagrange-type functions in constrained non-convex optimization*, Applied Optimization, Vol. **85**, (Kluwer Academic Publishers Boston 2003), xi + 286 pp, ISBN 1402076274.

### MathMedia

#### *“Ocean Devotion”*

Prof Neville De Mestre, iron man and mathematician from Bond University, has for the first time applied a mathematical equation to bodysurfing. It is “a complicated formula involving the mass, the cross-sectional area and the maximum swimming speed of the surfer combined with the force in the wave crest.” De Mestre might even have found the answer to the question of why the “shortish, stocky” writer of the newspaper article, James Woodford, always wins at bodysurfing over taller competitors. “The mean velocity of the moving surf front carries the surfer along with it until his or her legs start to drag in the slower moving water in the wave trough behind. It may therefore be advantageous to have a short body and legs to travel further”.

See also <http://www.theage.com.au/articles/2004/01/08/1073437405211.html>.

*The Age*, 9 Jan 2004, by James Woodford

#### *“Calculating a secure future”*

As Alison Aprhys wrote, far from creating dull number crunchers, mathematics makes beautiful minds. The CareerOne section of the Australian made an excellent job of promoting maths as a career path, featuring well-known radio DJ Adam Spencer and Clio Cresswell, who declared that mathematics is “a background that makes the world your oyster”. The article pointed to the many different employment opportunities for mathematicians (like becoming a radio DJ...) and gave some useful links, including to the AustMS website.

See also [http://www.shewrites.com.au/The\\_Australian\\_Maths.htm](http://www.shewrites.com.au/The_Australian_Maths.htm).

*The Australian*, 8 Nov 2003, by Alison Aprhys (Contributed by Kim Burgess)

*“Chocolates aid physics discovery”*

## Chocolates aid physics discovery

Princeton physicist Paul Chaikin's passion for M&M's was so well known that his students played a sweet practical joke on him by leaving a 250-litre drum of the little chocolates in his office.

Little did the American university students know that their prank would lead to a physics breakthrough.

The barrel full of plain M&M's made Professor Chaikin think about how well they packed in. A series of studies have shown they pack more tightly than perfect spheres. That surprises many physicists and Professor Chaikin. "It is a startling and wonderful result,"

Sidney Nagel, a physicist at the University of Chicago, said.

"One doesn't normally stop to think about this. If you did, you might have guessed what would happen, but you'd have guessed wrongly."

The issue of how particles pack together has intrigued scientists for centuries and has implications for fields such as the design of high-density ceramic materials for use in aerospace or other industries.

Professor Chaikin and his colleague, chemist Salvatore Torquato, used the M&M's to investigate the physical and mathematical principles involved when particles are poured randomly into a vessel.

Writing in Friday's issue of the journal *Science*, they said they found that oblate spheroids such as plain M&M's pack surprisingly more densely than regular spheres when poured randomly and shaken.

When poured in, they said, spheres occupy about 64 per cent of the space in a container. M&M's manage to pack in at a density of about 68 per cent.

Reuters



*The Age, 16 Feb 2004 (Contributed by Tony Guttman)*

*“Looking for the elusive mathematics factor”*

[...]Children from disadvantaged backgrounds do worse than their peers at maths”, says Peter Sullivan, a maths researcher and acting pro-vice-chancellor at La Trobe University. “It’s not so much a gender issue or whether they come from non-English speaking backgrounds, but a socio-economic issue across Australia,” he says. According to this newspaper article, research even indicates that the bottom 10 per cent of students will not improve in reading, writing and maths beyond their grade 4 levels. To investigate why working-class children have difficulties with maths, La Trobe University has been awarded a \$170,000 ARC grant. “Professor Sullivan will head the project, in collaboration with Dr Judy Mously from Deakin University and Prof Robyn Zevenbergen from

Griffith University.” The researchers will work with schools, putting on trial different teaching techniques.

*The Age, 17 Nov 2003, by Margaret Cook*

“*Scientists reach solution to chopstick challenge*”

“Britain’s chopstick phobia leads to development of uncle Ben’s chopstick equation” says a press release of the University of Surrey, Guildford, England. “Chopsticks are officially the UK’s most troublesome utensil, according to research conducted to develop the ‘Uncle Ben’s Chopstick Equation’ for Chinese New Year (22 January 2004).”



The formula, which calculates the comfort  $C$ , is explained at [http://www.surrey.ac.uk/news/releases/chopstick\\_04-2201.html](http://www.surrey.ac.uk/news/releases/chopstick_04-2201.html).

See also <http://avantgo.thetimes.co.uk/services/avantgo/article/0,,972738,00.html>.

*The Times, 22 Jan 2004 (Contributed by John Giles)*

## NSW ANZIAM 2003 Branch Meeting

The New South Wales Branch of ANZIAM held its annual branch meeting over the weekend of 22-23 November at Mittagong RSL Club. The meeting was organised by Tim Marchant with help from Maureen Edwards, Scott McCue and Mark Nelson (all UWG). There were 18 participants from ADF, ANU, CSO, USN and UWG and nine presentations were given, including four student talks. Bronwyn Bradshaw-Hajek, from UWG, won the student prize. The invited speaker was Dr Bob Anderssen (CSO) who spoke on *Inverse Problems in Rheology - Rheological Implications of Completely Monotone Fading Memory*.

M.I. Nelson

School of Mathematics and Applied Statistics University of Wollongong, Northfields Avenue, Wollongong, NSW 2522

### ANZIAM award for outstanding new researchers J.H. Michell Medal

Nominations are called for the award of the J.H. Michell Medal for 2005 for ANZIAM outstanding new researchers. Nominees must be in their first 10 years of research on 1 January 2005 after the award of their Ph.D., and be members of ANZIAM for at least 3 years. Nominations close on 30 November 2004. Further information can be obtained from <http://www.anziam.org.au/Medals/michell.html>.

The Chair of the Selection Panel for the 2005 award is

Professor Charles Pearce  
Department of Applied Mathematics  
University of Adelaide  
Adelaide SA 5005  
*E-mail:* [cpearce@maths.adelaide.edu.au](mailto:cpearce@maths.adelaide.edu.au)

Nominations can be made by any member of ANZIAM other than the nominee. A nomination should consist of a brief C.V. of the nominee together with the nominees list of publications and no more than a one page resume of the significance of the nominees work. Nominations should be forwarded to the Chair of the Selection Panel, in confidence.

Please note that, where necessary, the Selection Panel will consult with appropriate assessors concerning evaluation of any nominees research.

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### 2004 Australian Museum Eureka Prizes

The Australian Museum is seeking nominations for the 2004 Australian Museum Eureka Prizes. The Eureka Prizes reward excellence in Australian science and raise the profile of science in the community. A record 22 prizes worth \$220,000 will be awarded in 2004.

Entries in the Australian Museum Eureka Prizes close on **Friday 14 May 2004**. Candidates can either enter themselves or be nominated by others. Information and entry forms for all prizes are available at <http://www.amonline.net.au/eureka>.

## Appointments

### **Australian National University (Centre for Mathematics and its Applications):**

- Dr Adam Sikora was appointed as a Research Associate from February 2 to August 2, 2004, working with Professor Derek Robinson, Analysis and Geometry Program.

### **Bond University:**

- Dr Marcus Randall has been promoted to Associate Professor.

### **Charles Sturt University:**

- Dr Emma Wilkinson has resigned her lectureship in statistics at CSU to take up an appointment with the statistics consulting group at ANU.
- Dr John Louis has recently been promoted from Senior Lecturer to Associate Professor.

### **CSIRO:**

- Mr Charis Burridge has been promoted to level 6.

### **Edith Cowan University (School of Engineering and Mathematics):**

- Dr David Wilson, Lecturer in Mathematics, has left ECU at the end of his three year contract.
- Dr David McDougall, Senior Lecturer in Mathematics, has been appointed as Head of School of Engineering and Mathematics.
- Dr Lyn Bloom has been appointed as Mathematics Coordinator.

### **James Cook University (School of Mathematical and Physical Sciences) :**

- Dr Lance Bode (Mathematics) has been promoted to Associate Professor.
- Dr Peter Ridd (Physics) has been promoted to Reader.
- Dr Shaun Belward (Mathematics) and Dr Yvette Everingham (Statistics) have been promoted to Senior Lecturer.

### **La Trobe University:**

- Dr Phillip Charlton has been appointed as a Lecturer for one year during Dr Katherine Seaton's absence on maternity leave.

### **University of Adelaide:**

- Dr Hisham Sati has been appointed as Level A Research Associate.
- Dr Avijit Mukherjee has been appointed as Level B Senior Research Associate.
- Dr Thomas Leistner has been appointed as Research Associate.
- Prof. Michael Murray has been promoted to the Chair of Pure Mathematics (Level E).
- Dr Nick Buchdahl has been promoted to Reader (Level D).
- Dr Sue Barwick has been promoted to Senior Lecturer (Level C).
- Dr Catherine Quinn resigned from 27/2/04.
- Prof. Nigel Bean has been appointed to the Chair in Applied Mathematics.
- Dr Stephen Cox from the University of Nottingham has been appointed in Applied Mathematics (Level C).
- Dr Matthew Roughan commences in Applied Mathematics on February 2nd coming from AT&T Labs - Research, USA (Level C).
- Dr Andreas Kiermeier has been appointed in Statistics (joint appointment with Biometrics SA).

**University of Ballarat:**

- Dr Eldar Hajilarov took up a position of Lecturer in Mathematics on 26 September 2003. Eldar has research interests in universal algebra and non-smooth optimisation.
- Dr Alexander Kruger started as a Research Fellow on 29 October 2003. Alex's areas of specialisation are non-smooth analysis and non-smooth optimisation.

**University of Melbourne:**

- Dr John Sader has been promoted to Reader.
- Dr Aleks Owczarek has been promoted to Associate Professor.
- Dr Meei Ng has been promoted to Senior Lecturer.
- Dr Mark Fackrell and Dr Sally Kuhlmann have been appointed to continuing positions at Level A.
- Mr Mark Stewart joins the department as an Operations Research consultant.
- Dr Andre Costa is a new research fellow in Operations Research.
- Dr Des Robbie retired at the end of 2003, taking up a new position as Honorary Principal Fellow in 2004 .
- Prof. Robert E. Johnston joins the department as Honorary Professorial Fellow.
- Prof. Garth Gaudry has been appointed Director of the Australian Mathematical Sciences Institute.

**University of New South Wales:**

- Dr Bruce Henry has been promoted to Associate Professor (in Applied Mathematics).
- Dr Teresa Bates has been promoted to Lecturer (Pure Mathematics).
- Dr Jim Franklin has been promoted to Associate Professor (Pure Mathematics).
- Dr Peter Donovan has retired (Pure Mathematics).
- Dr Peter Cooke has retired (Statistics).

**University of Queensland:**

- Dr Min-Chun Hong takes up an appointment as a Senior Lecturer. Previously he held a Lectureship at the University of New England and research positions at the Australian National University.

**University of Western Australia:**

- Dr Valeri Stefanov has been promoted to Associate Professor.
- Dr Tsoy Ma has been promoted to Senior Lecturer.
- Dr Song Wang has been promoted to Associate Professor.
- Dr Kevin Judd has been promoted to Associate Professor.
- Dr Lyle Noakes has been promoted to Professorial Fellow.
- Dr Cai Heng Li has been promoted to Associate Professor.

**University of Western Sydney (School of Quantitative Methods and Mathematical Sciences):**

- Dr Andrew Francis has been promoted to Senior Lecturer.

### Visiting mathematicians

Visitors are listed in the order of the last date of their visit 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.

- Dr Zaiping Lu; China; 13 September 2003 - 13 March 2004; - ; UWA  
 Prof. Bao Qing Hu; China; 13 September 2003 - 13 March 2004; - ; UWA  
 Prof. Chongchao Huang; China; 13 September 2003 - 13 March 2004; - ; UWA  
 Mr Shigenori Mochizuki; U Tsukuba; to 30 March; Applied and nonlinear analysis; ANU; Prof. John Hutchinson  
 Prof. Kazuyuki Enomoto; Tokyo University of Science; December 8, 2003 to March 30, 2004; Nonlinear and Applied Analysis; ANU; Prof. Neil Trudinger  
 Prof. John Phillips; U Victoria (British Columbia); 1 February to 31 March; Analysis and geometry; ANU; Prof. Alan Carey  
 Prof. Gregory Vial; ENS; 1 March to 3 April; Advanced computation and modelling; ANU; Dr Markus Hegland  
 Dr Laimonis Kavalieris; University of Otago; March 1 to April 12, 2004; Statistical Science; ANU; Prof. Peter Hall  
 Dr Tony Gardiner; UK; January - April 2004; - ; UWA  
 Prof. Helge Tverberg; U Bergen; 1 January to 30 April; Algebra and topology; ANU; Prof. Mike Newman  
 Prof. Gary Lieberman; Iowa State U; 15 January to 5 May; Applied and nonlinear analysis; ANU; Prof. Neil Trudinger  
 Prof. Krzysztof Wojciechowski; Indiana at Purdue; 22 January to 10 May; Analysis and geometry; ANU; Prof. Alan Carey  
 Prof. Amnon Birman; RAFAEL ADA Israel; to 21 June; Advanced computation modelling program; ANU; Dr S Roberts  
 Dr Shawn Laffan; UNSW; 30 June to 29 June; Advanced computation and modelling; ANU; Dr Markus Hegland  
 Dr David Mason; South Africa; 1 February - 15 July 2004; - ; UWA  
 Dr Howard Silcock; ANU; to 31 July ; Advanced computation and modelling; ANU; Dr Markus Hegland  
 Prof. Kangrong Tan; Kurume U; to 1 August; Stochastic analysis; ANU; Dr Daryl Daley  
 Dr Aliko Muradova; Tbilisi State U; to 17 September; Advanced computation and modelling; ANU; Dr Markus Hegland  
 Prof. Raymond Carroll; Texas A&M; 1 August to 30 September; Statistical science; ANU; Prof. Peter Hall  
 Prof. Samuel Muller; U Bern; October 27 to 1 November; Statistical science; ANU; Prof. Alan Welsh  
 Dr Michael Levitan; USA; January - December 2004; - ; UWA  
 Prof. Dongsheng Tu; Queen's U; 1 February to 31 December; Statistical science; ANU; Profs. Peter Hall and Sue Wilson  
 Prof. Gi-Sang Cheon; Daejin U, South Korea; 15 Jan 2004 to 15 Jan 2005; linear algebra and combinatorics; ANU; Dr Ian Wanless  
 Prof. Ralph Stohr; UMIST; August 27 2004 to January 27, 2005; Algebra and Topology; ANU; Dr Laci Kovacs  
 Prof. Chaohua Dong; China; 1 February 2004 - 31 January 2005; - ; UWA

## Conferences

### 48th Australian Mathematical Society Annual Conference (2004)

28 Sep – 1 Oct 2004, RMIT, Melbourne

Director: Kathy Horadam, *E-mail*: [kathy.horadam@ems.rmit.edu.au](mailto:kathy.horadam@ems.rmit.edu.au)

*Web*: <http://www.ma.rmit.edu.au/austms04/>

Invited speakers confirmed to date:

Alberto Bressan (SISSA, Trieste, hyperbolic PDEs)

Lou Caccetta (Curtin, WA, Complex systems/Optimisation)

Etienne Ghys (ENS-Lyon, Geometry and dynamical systems)

Boris Mordukhovich (Wayne State, USA, Non-smooth analysis)

Neil Sloane (Shannon Labs AT&T, USA, Discrete Mathematics)

Vladimir Voevodsky (IAS Princeton, Algebraic geometry/homotopy)

Call for expressions of interest: If you are interested in organising a Special Session, please contact the Director.

### 6th International Conference on Optimization: Techniques and Applications

9–11 Dec 2004, University of Ballarat

*Web*: <http://www.ballarat.edu.au/icota>

### Annual International Meeting of the Resource Modelling Association

13–14 Dec 2004, RMIT, Melbourne

*E-mail*: [John.hearne@rmit.edu.au](mailto:John.hearne@rmit.edu.au)

### Joint CMA/AMSI Workshop on Geometry (classical and noncommutative) of generalised Dirac Operators

March 10-12, 2004, Mathematical Sciences Institute, ANU

*Web*: <http://wwwmaths.anu.edu.au/events/dirac04>

### CMA National Research Symposium on Probability Theory and its Applications

April 22-23, 2004, Centre for Mathematics and its Applications, ANU

*Web*: <http://wwwmaths.anu.edu.au/events/sy2004/heyde.html>