

## Group Theory, Combinatorics and Computation 2009 in Perth

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The AMSI special theme program Group Theory, Combinatorics and Computation 2009 took place over two weeks (5–16 January 2009) at the University of Western Australia. The conference was held in honour of Professor Cheryl E. Praeger's 60th birthday.

The first week was an international conference, held at the University Club of Western Australia, which brought together nearly 100 world experts, early career researchers and graduate students in the three areas of group theory, combinatorics and computation.



Professor Cheryl Praeger and Vice Chancellor Professor Alan Robson

The Vice-Chancellor of the University of Western Australia, Professor Alan Robson, opened the conference on Monday 5 January. The invited speakers and the titles of their talks were:

- Rosemary Bailey (Queen Mary, University of London, UK), 'Properties of graphs of optimal block designs';
- Peter Cameron (Queen Mary, University of London, UK), 'Synchronization and homomorphisms';

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- Marston Conder (University of Auckland, NZ), ‘Recent progress in the study of regular maps on surfaces’;
- Marcel Herzog (Tel-Aviv University, Israel), ‘A general measuring argument for finite permutation groups’;
- Kathy Horadam (RMIT, Aus), ‘Orbiting round the Five-fold Constellation’;
- Sasha Ivanov (Imperial College London, UK), ‘An explicit form of Sakuma’s theorem’;
- William Kantor (University of Oregon, USA), ‘Presentations of finite simple groups’;
- Cai Heng Li (UWA, Aus), ‘Finite groups which have a factorisation, and applications’;
- Charles Leedham-Green (Queen Mary, University of London, UK), ‘The matrix group recognition project’;
- Martin Liebeck (Imperial College London, UK), ‘The Ore Conjecture’;
- Brendan McKay (ANU, Aus), ‘Recursive structure of planar graph classes’;
- Peter Neumann (Queen’s College, University of Oxford, UK), ‘Permutation groups then and now’;
- Eamonn O’Brien (University of Auckland, NZ), ‘Effective algorithms for the special linear group’;
- Tim Penttila (Colorado State University, USA), ‘Finite generalised quadrangles’;
- Jan Saxl (University of Cambridge, UK), ‘Some results on distance transitive graphs, old and not so old’;
- Akos Seress (Ohio State University, USA), ‘Polynomial-time theory of matrix groups’.



Conference participants in front of the University club

The conference also featured 55 contributed talks in all areas of group theory, combinatorics and computation.

It is a measure of the esteem in which Cheryl is held by her colleagues that 12 of the 14 co-authors with whom Cheryl has published at least seven joint papers attended the conference.

The second week, held at the Weatherburn Lecture Theatre near the School of Mathematics and Statistics, consisted of a series of four short courses, aimed in particular at graduate students and early career researchers. Each course consisted of four lectures addressing a particular topic. The topics were chosen to cover all the three areas group theory, combinatorics and computation. The short courses were:

- ‘Association schemes’ by Rosemary Bailey,
- ‘Synchronization of automata, semigroups and groups’, by Peter Neumann,
- ‘Algorithms to investigate finitely-presented groups’, by Eamonn O’Brien and
- ‘Permutation group algorithms’ by Akos Seress.

The second week also featured a two-hour problem session hosted by Peter Cameron allowing delegates to present their favourite unsolved problems to the audience to stimulate further research connections; by the end of the week progress had been made on several of these problems.

The conference also featured a full program of social and recreational activities, starting with a welcome reception at the School of Mathematics and Statistics on Sunday evening. On Tuesday night, a private Body Pump class for conference participants held in the UWA Sports and Recreation Centre attracted 32 delegates; the class was led by Shelia Yu assisted by co-leaders Cheryl Praeger and Alice Niemeyer.



The Body Pump class, with Sheila Yu, Cheryl Praeger and Alice Niemeyer

On Wednesday afternoon, the conference excursion was a river cruise down the beautiful Swan River to Fremantle, where dolphins were spotted frolicking in the river, followed by afternoon tea at JoJo’s cafe on the banks of the Swan. The conference dinner was held on Thursday evening in the banquet hall of the University Club, featuring a background slide show of photographs old and new of Cheryl’s childhood, family and academic life. After dinner, the Vice-Chancellor Alan Robson, Peter Neumann, Jan Saxl, Martin Liebeck, John Henstridge and

Manley Perkel shared many of their fondest memories of Cheryl. Peter Neumann presented Cheryl Praeger with one of two special issues of the Journal of Australian Mathematical Society featuring articles dedicated to Cheryl communicated by Peter Neumann and Martin Liebeck. On Friday night Cheryl and John Henstridge hosted nearly 70 delegates for pizza and drinks at their nearby home. The second week was less formal and had fewer organised social activities, but the ‘survivors’ party’ at the University Club on Friday night was enjoyed by a suprisingly large number of survivors!

The extensive list of invited speakers, excellent venue, lavish morning and afternoon teas and comprehensive social program were only made possible by very generous sponsorship from a number of sources: we would like to thank AMSI, the University of Western Australia, Woodside Petroleum, Data Analysis Australia, the Perth Convention Bureau and JoJo’s Restaurant.

For details of the conference, lecture slides and more photos visit <http://sponsored.uwa.edu.au/gcc09>.

Organisers: John Bamberg (Ghent University); Michael Giudici (UWA); Cai Heng Li (UWA); Alice Niemeyer (UWA); Tim Penttila (Colorado State University); Gordon Royle (UWA).