

Centre for Research in Mathematics Newsletter

Western Sydney University

Achievements

- Prof Wei Xing Zheng has been listed on the Thompson Reuters 2015 Highly Cited Researcher list. This is a terrific achievement and an acknowledgement of the the impact and quality of Professor Wei's work.
- Prof Andrew Francis was accredited as a Fellow of the Australian Mathematical Society.
- Prof Andrew Francis has been awarded an Erskine Fellowship for 2016 from the University of Canterbury, New Zealand.
- A/Prof Roozbeh Hazrat has been awarded a Humboldt Research Fellowship for Experienced Researchers (2015-16).

Our warmest congratulations to Prof Zheng, A/Prof Hazrat and Prof Francis.

Seminars & Colloquia

- Pedro Feijao from the University of Bielefeld visited CRM in April. He gave a talk about his work in genome rearrangements and the Hultman Numbers.
- In May, Murray Elder from the University of Newcastle gave two talks about his recent work in solving work equations.
- Paul Gardner from University of Canterbury talked to CRM in July. His talk was titled "Selection against off-target ncRNA:mRNA interactions explains protein expression levels".
- In August, we had Chris Rodger from Auburn University (US) talking to use about equitable and fair colourings of graphs and graph decompositions.
- David Easdown from University of Sydney gave a talk about minimal faithful permutation representations of groups. This talk was in September.

What we did this winter

Symposium on Genome Rearrangements

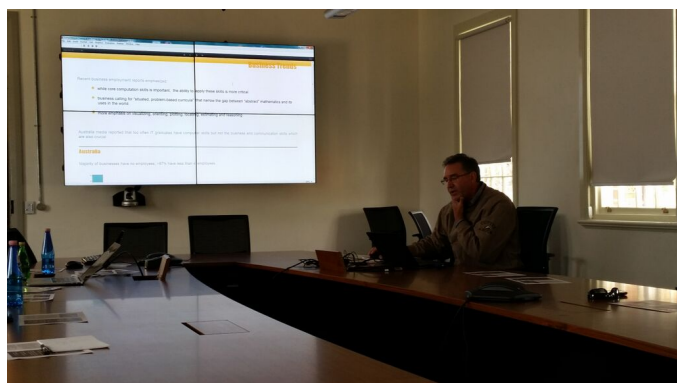
CRM organised a very successful symposium on Genome Rearrangements in April this year. We had a fantastic line up of speakers coming right from Sydney to all the way from Tasmania. Pedro Feijao from the University of Bielefeld who was visiting CRM at the time, also participated in the symposium. Congratulations to Shona Yu who worked very hard to make this event a success!

Student Computation Day

Roozbeh Hazrat organised a student computation day. Students in year 10 and 11 from 6 schools in Western Sydney were invited to participate. Leanne introduced them to her favorite puzzle - the Rubik's Cube. James initiated them in the world of insanity that we fondly refer to as infinity. Roozbeh talked about scientific computing using Mathematica. The day was a tremendous success and we hope the students left as excited about maths and computing as we at CRM are.

Introduction to New Computational Units at WSU

Roozbeh Hazrat organised an intimate gathering to introduce the new Computational Units at WSU. Luci Ellis who heads the Financial Stability Department at the Reserve Bank of Australia, gave a talk about the use of Mathematica as a visualization tool at Reserve Bank. Craig Bauling from Wolfram Research Inc., also spoke at the meeting about increasing computational fluency in students at the university level. Roozbeh and Glenn introduced the new units Computer Algebra and Data Science. The meeting concluded with a tour of the historical Female Orphan School building.



Craig Bauling talking to CRM.

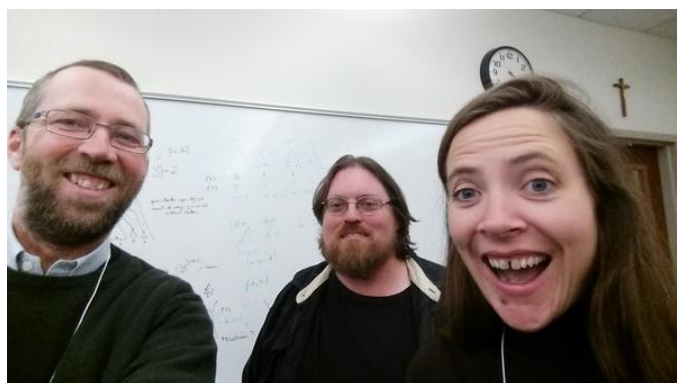


Luci Ellis spoke about use of Mathematica at RBA.

Visits and Visitors

- **Andrew Francis** visited Yaokun Wu at Shanghai Jiao Tong University in July. He spoke at the SIAM Applied Algebraic Geometry in Daejeon, South Korea in August. Later in the year (in October), he was on a hectic tour of the USA where he visited Ruth Davidson at University of Illinois and Mariel Vasquez and Javier Arsuaga at UC Davis. Andrew was also a speaker at the American Mathematical Society Sectional Meeting in Chicago.
- **Sangeeta Bhatia, James East, Attila Egri-Nagy** and **Roozbeh Hazrat** attended the 59th Annual Meeting of the Australian Mathematical Society. The conference was held in Adelaide. All of them gave talks at the meeting about their recent work. **Volker Gebhardt** co-organised the special session on ‘Groups and Monoids’ at this meeting.
- **James East** and **Attila Egri-Nagy** attended the EPSRC Durham Symposium on *Permutation Groups and Transformation Semigroups*. James gave a talk about his work in *Linear sandwich semigroups* and Attila spoke about *Finite Diagram Semigroups: Extending the Computational Horizon*.
- **Sangeeta Bhatia** completed an AMSI Internship with Geoscience Australia. She worked on a Bayesian framework for the quantification of fugitive point sources of emission.
- **Sangeeta Bhatia** participated in the NSW Heat of FameLab. FameLab is a science and research communications competition organised by the British Council.
- **Sangeeta Bhatia** gave a talk at the Ultimo Library in Sydney. This talk was aimed at general audience and was part of ‘Inspiring Australia’ that is a federal government initiative to encourage science engagement.
- **East James**, “A symmetrical presentation for the singular part of the symmetric inverse monoid” in *Algebra Universalis* 74 (2015) No. 3-4, pages 207 – 228.
- **East James** and Dolinka Igor, “Idempotent generation in the endomorphism monoid of a uniform partition” to appear in *Communications in Algebra*.
- Igor Dolinka, **East James** and Mitchell James, “Idempotent rank in the endomorphism monoid of a non-uniform partition” to appear in *Bulletin of the Australian Mathematical Society*.
- **East James** and Nordahl Thomas, “On groups generated by involutions of a semigroup” in *Journal of Algebra* 445 (2016) pages 136 – 162.
- **East James**, “Singular braids and partial permutations” in *Acta Mathematica Scientia (Szeged)* 81 (2015), pages 55 – 77.
- **East James**, Mitchell James and Péresse, Y, “Maximal subsemigroups of the semigroup of all mappings on an infinite set” in *Transactions of the American Mathematical Society*, Vol. 367 No. 3 (2015), pages 1911 – 1944.
- **Francis Andrew** and Steel Mike “Which phylogenetic networks are merely trees with additional arcs?” in *Systematic Biology*, 2015, 64 (5): pages 768 – 777.
- **Gebhardt Volker** and **Tawn Stephen** “Zappa-Szép products of Garside monoids” to appear in *Mathematische Zeitschrift*.
- **Park Laurence** and **Stone Glenn** “Inducing Controlled Error over Variable Length Ranked Lists.” in *Advances in Knowledge Discovery and Data Mining*, Springer International Publishing, 2014 pages 259 – 270.
- **Park, Laurence AF** and **Stone, Glenn** “By the power of Grayskull: Small sample statistical power in Information Retrieval evaluation” in *Proceedings of the 2014 Australasian Document Computing Symposium*.

Recent papers accepted



Andrew with Ruth Davidson and James Degnan at the AMS Sectional Meetings in Loyola University, Chicago.



James and Attila at the EPSRC Durham Symposium.

- Gunnar Brinkmann, Dieter Mourisse and **Rylands Leanne**, “On the existence of nanojoins with given parameters” in *Journal of Mathematical Chemistry*, 53(9):2078–2094, 2015.
- Nicholas Jackie and **Rylands Leanne** “HSC mathematics choices and consequences for students coming to university without adequate maths preparation” in *Reflections*, 40(1), 2015.
- M. Miller, O. Phanalasy, J. Ryan and **Rylands Leanne** “A note on antimagic labelings of trees” in *Bulletin of the Institute of Combinatorics and its Applications*, 72:94–100, 2014.
- **Rylands Leanne** and Don Shearman “Supporting engagement or engaging support?” in *International Journal of Innovative Science and Modern Engineering*, 23(1):64–73, 2015.
- Hewitt Alison, Holford Paul, Renshaw Adrian, **Stone, Glenn** and Morris E Charles “Seed size and the regeneration niches of one rare (*Melaleuca deanei*) and three common (*Melaleuca styphelioides*, *Melaleuca thymifolia* and *Melaleuca nodosa*) *Melaleuca* (Myrtaceae) species of the Sydney region” in *Austral Ecology* (2015).
- Fahey Paul P, Mallitt Kylie-Ann, Astell-Burt Thomas, **Stone, Glenn** and Whiteman David C “Impact of pre-diagnosis behavior on risk of death from esophageal cancer: a systematic review and meta-analysis” in *Cancer Causes & Control*, Vol 26, No. 10.

Summer’s looking good

Upcoming Events and Visits

- The Victorian Algebra Conference is being hosted by CRM this year and is being organised by Roozbeh

and James. The conference will run from 30th November to 2nd December.

- Laurence is organising the 20th Australasian Document Computing Symposium (ADCS 2015). The conference will be held in Parramatta on the 8th to 9th of December, 2015.
- Ju Huang from Fujian University is visiting CRM in October 2015 to work with Roozbeh Hazrat. She will be at CRM for the next six months. CRM welcomes Ju, we look forward to hearing about her research.
- James East is visiting Jintana Sanwong from Chiang Mai University in December.
- James Mitchell is visiting CRM. He will be at CRM from 24th November to 15th December.

CRM Researchers

Core members:

- Dr James East
- Prof Andrew Francis
- Dr Volker Gebhardt
- Dr Roozbeh Hazrat
- A/Prof Leanne Rylands
- A/Prof Glenn Stone
- Prof Wei Xing Zheng.

Associated researchers:

- Dr Rehez Ahlip
- Sangeeta Bhatia
- Dr Attila Egri-Nagy
- Stuart Serdoz

Ju Huang

Ju Huang is a PhD candidate at Fujian Normal University, China. She is visiting Roozbeh Hazrat at the Centre and she will be with us for the next six months. When she can find time, she likes to travel and enjoy new sights.

