Centre for Research in Mathematics Newsletter
University of Western Sydney

CRM Retreat

On 27th of November 2014, CRM had its second retreat at Coogee Plaza. The advisory board, Tony Guttmann, Bill Moran, Ross Street and Jacqui Ramagge and the CRM staff discussed a variety of issues regarding the future of CRM. Andrew Francis gave an overview of the centre, its aims and goals. Jacqui delivered an excellent talk on how to prepare ARC grants and provided staff with many useful tips. Attila Egri-Nagy gave an inspiring talk on what mathematics is, touching on the research areas of several CRM members. There were many informal discussions along the way.

Seminars & Colloquia

- Pere Ara from University of Autonoma, Barcelona spoke to CRM about *"Symbolic dynamics and Leavitt path algebras"* on 11th November.
- Dr Ryan Loxton from Curtin University gave a talk about his work in *"Industrail Optimization"* on 28th October.

- Neil Saunders from the University of Bristol visited CRM on 13th October and gave a talk about "Exceptional Quotients of Permutation groups".

What we did this summer

James East visited Novi Sad in Serbia, University of St Andrews in Scotland and York in June and July. He gave presentations at NBSAN Edinburgh, ICMS Edinburgh. In September, James visited Novi Sad, Stuttgart (conference presentation at Diagram Algebras Stuttgart).

Sangeeta Bhatia won the **3 minute thesis** competition at the *SCEM 2014 Research Future Postgraduate Forum* and represented SCEM at the UWS 3mt final.

- **Andrew Francis** attended the Phylomania 2014 conference at the University of Tasmania in November. He gave a talk in the conference about . **Sangeeta Bhatia** also spoke about her latest project at the same conference.

- **Roozbeh Hazrat** receieved a well-deserved promotion, he is now an Associate Professor. Congratulations Roozbeh!

- **Prof Wei Zheng** was elected IEEE Fellow. This is a huge honour, IEEE elevates less than 0.1% of its voting members to this member grade elevation. Our warmest congratulations to Prof Wei.

Recent papers accepted

- **Sangeeta Bhatia, Attila Egri-Nagy and Andrew Francis** "Algebraic double cut and join: A group-theoretic approach to the operator on multichromosomal genomes" to appear in *Journal of Mathematical Biology*.

- Igor Dolinka, **James East**, Athanasios Evangelou, Des FitzGerald, Nicholas Ham, James Hyde, Nicholas Loughlin "Enumeration of idempotents in diagram semigroups and algebras" to appear in *Journal of Combinatorial Theory Series A*.

- **James East** "Partition monoids and embeddings in 2-generator regular *-semigroups" to appear in *Period. Math. Hungar.*.

- **James East** "Defining relations for idempotent generators in finite partial transformation semigroups" appeared in *Semigroup Forum, Vol 89 Issue 1*.

- **James East** "Infinite partition monoids" appeared in *International Journal of Algebra and Computation*.

- **Andrew Francis** and Mike Steel "Tree-like Reticulation Networks - When Do Tree-like Distances Also Support Reticulate Evolution" appeared in *Mathematical Biosciences Volume 259*

Looking ahead

- Kulumani Rangaswamy from Colorado Springs is visiting CRM in January 2015.

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

Dr Shona Yu

Dr Shona Yu is a post-doctoral research fellow in Algebraic Biology. Her research interests lie mainly with diagram algebras, stemming from problems in knot theory, statistical mechanics, representation theory, the study of Artin and Coxeter groups, and nowadays bacterial DNA knotting and mutations. Shona is also our very own mathematical vigilante, battling narrow-mindedness and promoting STEM education through outreach activities. She is often caught violating mathematician stereotypes, enthusiastically researching/talking about food and trying to get away with dancing in public places.

Dr Leanne Rylands

Dr Leanne Rylands is a member of the research group "Success in Tertiary Mathematics" and also works with the research group "Theoretical Investigations in Mathematics and Statistics". She is a puzzle connoisseur, her favorite puzzle is Rubik's Cube. She uses Rubik's cube as a tool to excite kids about mathematics through various ourteach activties. Dr Leanne Rylands has coauthored the book "Cube Games" about Rubik's Cube. "Cube Games" was listed as a New York Times Best Seller. She has also coauthored the book "Mastering Rubik's Clock". She is a member of the Australian Wildlife Rescue organization WIRES.