

New Directions in Fractal Geometry

23–28 November 2014

The Australian National University and its Coastal Campus at Kioloa

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Fractal geometry is a fast growing and dynamic area of mathematics and this meeting's goal was to bring together pure and applied researchers working on the cutting-edge of fractal geometry to stimulate research and collaboration between theory and applications. There was also an extra effort made to attract female researchers. In particular, there was a special women's luncheon with a talk by Professor Sue Wilson (ANU, UNSW) on her life-experiences as a woman in science. Having this event early in the conference provided a great opportunity for all the women to get to know each other and there was strong feedback that this was very worthwhile.



New Directions attendees at Kioloa.

On the Monday on the ANU campus there were fascinating research talks including presentations from leading international figures Valerie Berthé (CNRS) on the links between fractals and Kronecker dynamics, Doug Hardin (Vanderbilt) on discrete minimum energy problems and Jun Kigami (Kyoto) on self-similar sets as quotients of shifts. Konstantin Igudesmann (Kasan State) spoke on applications to fractal antennas. In the evening Michel Lapidus (UCal) gave a public lecture entitled 'An Invitation to Fractal Geometry and Its Applications' to an appreciative audience.

The talks on Tuesday morning continued to be of a very high standard with contributions from Jörg Thuswaldner (Leoben) on the topology of self-affine tiles, Jeff

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Geronimo (GTech) on a separation condition for fractal attractors, Irmina Herbert (Warsaw) on fractal star bodies and Mike Whittaker (Wollongong) on fractal substitution tilings.

After lunch on Tuesday all participants boarded the bus for the NSW South Coast. After a short sightseeing stop at Braidwood, the bus made its precipitous way down through the mountains and arrived at the ANU Coastal Campus at Kioloa.



Meeting the neighbours.

During the next three days there were intensive sessions of talks in the mornings but the afternoons were all 'free' to encourage interaction between the participants. This led to many fruitful discussions, sometimes between early career researchers and established experts, sometimes between people from different specialisms finding interesting common ground and sometimes between theory and applications. Key talks were given by Michel Lapidus (UCal) on links between fractals and non-commutative geometry, Károly Simon (Budapest) on multi-fractal analysis of traffic on the internet, Christoph Bandt (Greifswald) on fractal morphisms, Jon Borwein (Newcastle) on short walks, Markus Hegland (ANU) on connections between numerics and fractals, Christian Gentil (Bourgogne) on applications of fractals in computer-aided design, and Andrei Tetenov (Gorno-Altai) on self-similar Jordan arcs.

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In summary, to quote one overseas visitor:

... this was a high level conference that gathered together specialists, researchers of all generations. The discussions were very stimulating. The organization was excellent, as well as the general atmosphere. I have access though this conference to results I was not aware of and which will be undoubtedly very useful in a near future for my research.

There was a strong groundswell that this conference should be the starting point of a series and another conference, organised on similar lines should be planned for 2016.

This conference was supported by AMSI, AustMS, CARMA, ANU, Fractal Antenna Inc. and ACEMS.

Visit <http://maths.anu.edu.au/events/new-directions-fractal-geometry> for further details.



Friendly Rainbow Lorikeets visit Jörg Thuswaldner at the Kioloa mess hall.