



Research School of Physics and Engineering

Weekly newsletter | Volume 40 Number 13 | 28 April – 2 May

DIRECTOR'S COLLOQUIUM



**Length and time scales in atmospheric physics:
How Windlab optimises wind energy economics**
Dr Nathan Steggel and Dr Keith Ayotte

The Wind Scape Institute

12:00 Thursday 1 May

Leonard Huxley Lecture Theatre

Snacks will be served from 11:30 am in the RSPE tearoom

OHS BULLETIN

OHS Courses

Laser safety (OHS20) 6 May

Electrical appliance testing (OHS11) 7 May

Flammable liquids (OHS13) 27 May

Electrical safety & low voltage rescue (OHS29) 30 May

DEPARTMENTAL SEMINARS

**Department of Quantum Science and Research
School of Astronomy and Astrophysics**

Dark Matter

Dr Paul Francis

Dr Francis has kindly agreed to speak to the Australia France Association of Scientific and Technical Experts on Dark Matter. Please come along and bring any interested friends.

6:00pm Tuesday 29 April

RSPE Link Seminar Room

5:45pm Drinks & nibbles provided

Nuclear Physics Department

SPICE detector for in-beam electron spectroscopy

Dr M. Moukaddam

On behalf of the SPICE group at ISAC-II, TRIUMF

11:00am Monday 5 May

Nuclear Physics Seminar Room

Applied Mathematics

Pattern Formation: Mathematics and Materials

**Advanced Institute for Materials Research,
Tohoku University**

AM will be hosting a number of visitors from Japan next week; mainly mathematicians and physicists from the Advanced Institute for Materials Research, Tohoku University, Sendai.

If you are interested in showing them around or discussions, please inform stephen.hyde@anu.edu.au.

Their principal activity will be a joint meeting on Tuesday and Wednesday with a number of people from our School, and elsewhere.

Please see attached schedule of events.

PATTERN FOR ANZAC DAY

The ANZAC pattern below was fabricated using the Focused Ion Beam setup at Australian National Fabrication Facility (Australian National University branch) by PhD student Evgeny G. Mironov for the celebration of ANZAC Day in 2014.

The structure was milled by accelerated gallium ions, which bombarded a 200 nanometer thick golden film deposited on top of the quartz substrate. The pattern was created by vectoring the original image and uploading the coordinates of the vertexes to the specially designed patterning script. The structure is approximately 300 micrometers in height and in width. The smallest features are as small as only 1 micrometer in size. The black-and-white image is taken by Scanning Electron Microscope and the color image is obtained by Leica optical microscope with a magnification of $\times 5$.

The ANZAC Day structure will be on display in EME, please contact Julie Arnold for details.



Time	Speaker	Title
Tuesday April 29, pm		
13.50	intro	
14.00	Motoko Kotani, Advanced Institute for Materials Research, Tohoku University	A mathematical challenge at AIMR
14.30	Hisashi Naito, Nagoya University,	Negatively curved carbon networks
15.00	Stu Ramsden, Vizlab and Applied Maths, ANU	EPINET – Minimal surfaces, hyperbolic tilings and euclidean nets
15.30 – 15.50	tea	
15.50	Liliana de Campo, Applied Maths, ANU	Three-phase star-polyphilic liquid crystals
16.20	Yoji Akama, Mathematics Institute, Tohoku University	Solution to spherical Hilbert eighteenth problem and the deformation of spherical tilings
16.50	Gerd Schröder-Turk, Institut fuer Theoretische Physik, Friedrich-Alexander Universitaet Erlangen-Nuernberg	The tricontinuous 3ths(5) phase: A new network morphology in copolymer melts
Wednesday April 30, am		
9.00	Masashi Mizukami, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University	Interfacial water on silica surfaces in cyclohexane: physical wetting of molecular macrocluster formation?
9.30	Vanessa Robins, Applied Maths, ANU	Skeletonization and partitioning of digital images using discrete Morse theory
10.00	Yasuaki Hiraoka, Kyushu University	Persistent homology and atomic arrangements in materials
10.30	Andrei Rode, Laser Physics, ANU	New high-pressure material phases in fs-laser induced confined micro-explosions
11.00 – 11.20	tea	
11.20	Yasumasa Nishiura, Advanced Institute for Materials Research, Tohoku University	Multi-state network for loop searching system with self-recovery property
11.50	Mohammed Saadatfar, Applied Maths, ANU	Rigidity of elastomeric networks
12.10	Nobuaki Obata, Dept.of Mathematics, Tohoku University	Coupled oscillators on digraphs with self-adaptive dynamics
12.40 – 1.40	lunch	
Wednesday pm		
13.40	Alexandra Rodriguez, Research School of Engineering, ANU	Self-assembling peptide hydrogels for repair of neural circuitry
14.10	Natsuhiko Yoshinaga, Advanced Institute for Materials Research, Tohoku University	Dynamics of pattern formation in nonequilibrium soft materials
14.40	Adrian Sheppard, Applied Maths, ANU	Exploring the connectivity and curvature of fluid interfaces in porous media
15.10 – 15.30	tea	
15.30	Nobuaki Aoki, Advanced Institute for Materials Research, Tohoku University	Flocculation and re-dispersion of nanoparticles in shear stress field
16.00	Stephen Hyde, Applied Maths, ANU	Liquid crystals in vivo
16.30	closing discussion: possible Sendai – Canberra links?	
18.30	dinner	