

# Seminar

Friday, 5th November 2010

11 am - Room 701

[Dr Melanie Johnston-Hollitt](#) (Part 1)

School of Chemical and Physical Sciences, Victoria University of Wellington

& [Dr Slava Kitaev](#) (Part 2)

[Auckland University of Technology](#)

[New Zealand Square Kilometre Array \(SKA\)](#)

## ***Future New Zealand Activities in Radio Astronomy: Building Capability for the Square Kilometre Array***

**Part 1:** New Zealand has been through a recent expansion of interest and capability building in radio astronomy. This expansion is driven by national interest in the Square Kilometre Array and has been underpinned by new research groups being established, NZ-based researchers taking leading roles in international radio surveys and research teams, development of novel signal processing techniques and successful new trans-Tasman VLBI experiments.

We present an update on the NZ-wide advances in the field of Radio Astronomy and Radio Engineering with a particular focus on contributions, which hope to either directly or indirectly contribute to New Zealand's engagement with the international Square Kilometre Array (SKA) project. We further discuss the status of the SKA project in New Zealand.

**Part 2:** The statistical characteristics of transient radio sky are largely unknown. The possible origin of predicted transients include annihilating primordial black holes, colliding neutron stars, supernovas, magnetars, RGB and possibly some other exotic objects which are yet to be observed. Without understanding of the processes unfolding on very short time scale and likely with very large release of energy our understanding of the Universe is incomplete.

New and planned large radio telescopes such as MWA, ASKAP, SKA and others will have the capacity to study transient sky; however the techniques are yet to be developed. Small inexpensive experiments targeting detection of bright transients over the large areas of sky can help to develop such techniques, and at the same time according to various speculations allow detecting a few per year or even per day events. Transient Radio

Emission Array Detector (TREAD) is a collaborative effort of several NZ stakeholders aiming to develop such new technique and study transient radio sky. The difficult issue of discriminating genuine transient from man-made interferences generally requires avoiding the interferences as much as possible. Our study shows the unique qualities of Mackenzie Country for these purposes.

### **About the speaker**

Dr Slava Kitaev received his integrated BS/MS from Urals State University in 1990. He received his PhD in the field of radio astronomy and instrumentation from P.N. Lebedev Physical Institute of Russian Academy of Sciences in 1998. From 1987 till 2001 he was with Pushchino Radio Astronomy Observatory near Moscow working in the field of interstellar medium using one of the largest European radio telescopes DKR-1000 and also leading a technical group developing computing and data transport technologies for radio astronomy. After a short “industry” break in Germany, Dr Kitaev arrived to NZ and joined the School of Engineering @ AUT in 2003. Since then he played a significant role in activating SKA and radio astronomy research in NZ. Dr Kitaev is a founding member of Executive Committee of NZ SKA R&D Consortium.

*All Welcome*

### **Contact Details**

For further information phone 364 2404, or visit our website: [www.phys.canterbury.ac.nz](http://www.phys.canterbury.ac.nz)