

Winter Public Lecture Series in Physics
in honour of Alexander and Leicester McAulay



The Square Kilometre Array: Shining a flashlight into the darkest corners of the universe

Dr Lisa Harvey-Smith
CSIRO, Sydney

Tuesday, 21 August 2012, 8:00 PM
Physics Lecture Theatre 1, Sandy Bay Campus, University of Tasmania

ABSTRACT:

As astronomers learn more about the cosmos and our place in it, we become less certain of our traditional model of the universe. Cosmologists now believe that only 4% of the universe is made from normal 'matter' - the stuff that makes up you, me, and everything we see on Earth. The rest is labelled as mysterious "Dark Matter" and "Dark Energy". Our only hope to understanding these unseen 'forces' is to measure the invisible pushes and pulls that affect the stars, galaxies, and gas in the universe - the normal, everyday stuff that we can see.

To tackle these problems and more, an international team of astronomers is planning something audacious: a telescope so vast and distributed, it will comprise over 10,000 individual elements and span hundreds of kilometres. The thousands of individual antennas will be built in Australasia and Southern Africa. This resulting telescope, dubbed the 'Square Kilometre Array' (SKA), will be able to detect the faint radio signals from the edge of the universe.

In this talk, Dr. Harvey-Smith will discuss the major science topics the SKA will tackle, describe the enormous practical challenges of building this telescope, and predict some of the more surprising spin-offs expected in areas as diverse as image processing, supercomputing, telecommunications, and green energy.

SPEAKER PROFILE:

Dr Lisa Harvey-Smith is a Research Astronomer at the Commonwealth Science and Industrial Research Organisation (CSIRO), based in Sydney. Her research interests include the birth and death of the most massive stars in our galaxy, and the nature of elusive magnetic fields that thread our universe.

Lisa began her research career at the UK's Jodrell Bank Observatory and undertook a short research position at the Max Planck Institute for Radio Astronomy in Germany. On completing her PhD, she held research positions in The Netherlands and at the University of Sydney before joining CSIRO. She is focused on planning for the \$2 billion international mega-science project, the 'Square Kilometre Array' radio telescope.

Lisa is an Honorary Senior Lecturer at the University of Sydney. In her spare time, she enjoys ultra-long-distance running, including 12-hour and 24-hour races.

This is the third lecture in this year's Winter Public Lecture Series in Physics. The series started in 2002 and is held in honour of Alexander and Leicester McAulay, two renowned Physics professors, who were inspiring teachers and did significant research at the University of Tasmania during the early years.

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