



# STARING AT THE STARS

AUSTRALIA'S PROSPECTS OF HOSTING ONE OF THE 21ST CENTURY'S BIGGEST SCIENCE ENDEAVOURS, A \$2.5 BILLION 'ALL-SKY' RADIO TELESCOPE, ARE LOOKING BRIGHT.

## Radio astronomy

**T**he ultimate goal of research at the Curtin Institute of Radio Astronomy (CIRA) is to ensure Australia has the capabilities to host the most powerful radio telescope ever built, the international Square Kilometre Array.

The linked array of thousands of antennas, spanning 3000 kilometres, will source data from deep space, and lead to an immense amount of new knowledge about the origins and actions of the Universe.

Technological preparation for the SKA involves numerous 'pathfinder' projects around the world. A key precursor project is the Murchison Widefield Array (MWA) in Western Australia, comprising 512 prototype antennas to scan the Universe in the low-frequency SKA range.

The MWA is likely to be the first operational pathfinder in WA, so its success could help steer the international decision (expected in 2012) as to whether Australia or South Africa hosts the \$2.5 billion SKA. To this end, during the past two years Australian and international collaborations and funding have escalated to support the MWA project.

In 2009 Curtin and The University of Western Australia established the International Centre for Radio Astronomy Research (ICRAR) in Perth. Super Science Fellowships, awarded earlier this year to CIRA co-director Professor Steven Tingay by the Australian Research Council (ARC), will fund MWA early science research and ICRAR projects that focus on MWA apparatus. These initiatives have enabled CIRA to double in size over the past 12 months, to a team of more than 40 science and engineering researchers.

Another significant boost to CIRA is the ARC's new Centre of Excellence for All-sky Astrophysics (CAASTRO) led by the University of Sydney. Tingay is one of CAASTRO's seven chief investigators and a member of the six-person executive team.

'CAASTRO activities complement CIRA's work on the MWA program,' Tingay said. 'The aim is to bring together top astronomers into a focused collaboration to help Australia become the international leader in wide-field astronomy, including leading major science programs for the SKA.'

The level and diversity of support for the MWA is a reflection of both the scientific and economic benefits the SKA will bear. Work on the MWA has been able to accelerate via a \$4.6 million grant from the National Collaborative Research Infrastructure Strategy fund and \$3.1 million from the Education Investment Fund, as well as substantial support from the Australia-India Strategic Fund and from Curtin.

Curtin's Professor of Radio Astronomy Engineering, Peter Hall, will lead Australia's engagement with the European Aperture Array Verification Program (AAVP) set to begin at ICRAR and at the Murchison Radioastronomy Observatory, where the MWA is based.

'The large European consortium is a new community to WA,' Hall said. 'And, importantly, the engineering challenges in the MWA enable local industries to get a head start on partnering with us on next-generation AAVP pathfinder research.'

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