GLEAM-X: Exploring the Universe in Radio Colour

The Murchison Widefield Array (MWA) is a low frequency (80 — 300 MHz) radio telescope operating in Western Australia and the only SKA_Low precursor telescope. One of the largest science programs for the MWA is the GaLactic and Extragalactic All-sky MWA (GLEAM) survey, which has surveyed the entire visible sky for two years since the MWA commenced operations.

A large part of the 0.5 PB of GLEAM data has been published as an extragalactic source catalogue (see figure), and work is ongoing to publish deeper fields of some areas, and the Galactic Plane. Observations of GLEAM-X have commenced, using the newly-upgraded MWA, which now has double the resolution, allowing images 10x deeper to be created, potentially revealing millions of new radio sources over the next few years.

Combining the datasets will create the most sensitive survey output from the MWA ever. As well as generating images and catalogues that are widely useful, the student will also undertake a focussed research project that utilises the data. This could include (but is not limited to): transient/variable radio sources, scintillation, the ionosphere, and continuum studies on objects such as radio galaxies, galaxy clusters, supernova remnants, and pulsars. The project is well suited to a student with strong computing skills, an interest in gaining a deep understanding of radio astronomy calibration and imaging, and an interest in a science area that can be addressed by data from the survey.

**Research Field**
Radio Astronomy

**Project Suitability**
PhD

**Project Supervisor**
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**Co-Supervisors**
TBD

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**Fig 1:** The first year of GLEAM observations, covering the whole Southern Sky. This is the first radio colour view of our universe: find out more via this TED talk: [http://bit.ly/nhwted](http://bit.ly/nhwted).