



Science with MIRANDA

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March Meetings

- Two international meetings hosted by the ATNF during March
- Challenges of Focal Plane Arrays
 - Astron, Canada, Australia
- Science with MIRANdA
 - 70-80 attendees
 - 28 talks
- Major outcome to produce the science case for MIRANdA and to outline upgrade paths

Recap on MIRANDA

- Previously known as xNTD
- CSIRO/NCRIS funded, Aus-Can-ZA collaboration
- 30 parabolic dishes, 12 m diameter
 - 435 baseline interferometer, ~ 3500 m² collecting area
- 10x10x2 element focal plane array with digital beamforming
 - 30 interferometers, ~ 30 sq deg FoV at 1.4 GHz
- Frequency range 0.7 – 1.8 GHz
- Bandwidth 300 MHz, 20000 channels (16 kHz resolution)
- $T_{\text{sys}} = 50$ K (uncooled)
- few km maximum baseline, fixed configuration
 - Possibility to pick up and move dishes to reconfigure
- Located in Murchison Shire, Western Australia

MIRANdA Science Case

- 8 science chapters, 125 pages, 36 authors
- Extragalactic HI (Lister Staveley-Smith)
- Continuum science (Ilana Feain)
- Extragalactic Faraday Rotation (Bryan Gaensler)
- Galactic/Magellanic science (Naomi McC-G)
- VLBI science (Steven Tingay)
- Pulsar science (George Hobbs)
- Transient radio sky (SJ)
- Other science (Ron Ekers)

Science Highlights

- Detection of 7×10^5 galaxies in HI emission to $z \sim 0.2$ to understand galaxy formation and gas evolution.
- Detection of 6×10^7 sources to determine the evolution, population and formation of galaxies across cosmic time.
- Measure 5×10^5 RMs with $10'$ spacing across the sky to understand the Milky Way's magnetic field.
- Understand the evolution of the ISM of our own Galaxy through observations of its atomic, molecular, ionised and magnetic components
- To characterise the radio transient sky, detect and monitor transient sources and discover unknown sources
- The discovery and timing of 1000 pulsars
- To play a key role in Australian and global VLBI networks

If you are not already an author there's still time to join the fun!!

The science case will be posted on the web by the end of this week.

A joint Australian/Canadian science case will be produced by the end of this month.

Likely submission of the science case to PASA in the near future.

Follow the MIRA link via the ATNF home page