GLEAM-X

GaLactic and Extragalactic All-sky MWA survey - eXtended

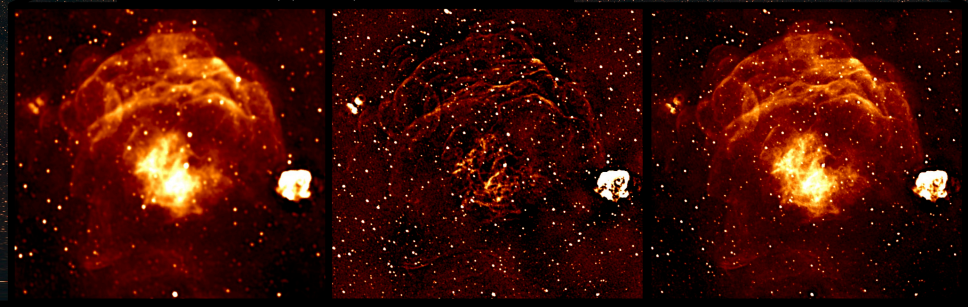
A low-frequency MWA radio image showing the entire radio sky visible from the future SKA_LOW site. At 2' resolution, it is formed from three bands: red =72 - 103 MHz; green = 103 - 134 MHz; blue = 139 - 170 MHz. Featured as one of Nature's best science images of 2016, it comprises ~10,000 individual calibrated snapshots from the original GLEAM survey.

Science Goals

- Detecting and characterising cluster relics and haloes up to and beyond z = 0.45;
- Measuring the low-frequency luminosity function to z ~ 0.5;
- Building on the POlarised GLEAM Survey (POGS; Riseley et al. submitted) to find polarised sources;
- Determining broad-band radio SEDs of >1M radio sources over ASKAP-accessible sky;
- Finding compact supernova remnants in the Galactic Plane;
- Extending cosmic ray tomography via HII region absorption (Su et al. 2017).

100% fractional bandwidth: 72 - 231 MHz
spectral resolution: 10 kHz ; angular resolution: 45"

Vela and Puppis supernova remnants



GLEAM 90MHz
30 MHz bandwidth

Long-baseline MWA 98MHz
by Chenoa Tremblay

Feathered combination

Drift Scan Survey Design

- 672 hours in two-minute snapshots
- RMS noise ~ 1 mJy/beam
- LST-locked for transient & variability analysis
- Declination < 30°
- Sky area: 30,000 deg^2

Complementary Deep Pointings

- 3 hours per pointing over the band
- RMS noise < 1 mJy/beam
- Targeting Galaxy and Mass Assembly (GAMA) fields
- MWA Interestingly Deep Astronomical Survey (MIDAS)
- GAMA OverwheLmingly Deep (GOLD) Survey

Further Reading

GLEAM survey design: Wayth et al. (2015)
GLEAM extragalactic catalogue: Hurley-Walker et al. (2017)
GLEAM Galactic plane data release: Hurley-Walker et al. (in prep)

MWA MURCHISON WIDEFIELD ARRAY
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