



The Australia Telescope National Facility

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Extended Abstract

The Australia Telescope National Facility (ATNF) is operated by CSIRO Astronomy and Space Science, a division of CSIRO – Australia’s national science agency. The facility supports research in radio astronomy and can be used by researchers from institutions all over the world.

The ATNF currently offers the Australia Telescope Compact Array, Parkes Telescope, and the Long Baseline Array to users based on scientific merit. Users also have access to NASA’s 70 m antenna in Tidbinbilla, near Canberra. More information on the ATNF, including instrument capabilities and how to request observing time, may be found at <http://www.atnf.csiro.au>.

The Australia Telescope Compact Array (ATCA), near Narrabri, NSW, consists of six identical 22-m antennas equipped with sensitive receivers in the range 1–100 GHz. Five of the antennas can be moved along a 3 km east-west railway track with a 0.2-km north-south spur. The sixth antenna is located 3 km west of the railway track, providing a maximum 6 km baseline. System temperatures ~ 20 K are now achieved over most of the range 1–11 GHz. Instantaneous bandwidths of 4 GHz (with full Stokes polarimetry) are available.

The Australian Square Kilometre Array Pathfinder (ASKAP) is currently being commissioned for the ATNF. ASKAP is a unique survey interferometer consisting of 36 antennas that provides a field of view of 30 square degrees and resolution $10''$ (1.4 GHz) using novel Phased Array Feeds (PAFs). ASKAP will support a comprehensive survey program and smaller PI-proposed projects. It operates with 0.3 GHz bandwidth in the range 0.7–1.8 GHz. PAFs have already been installed on 30 antennas, and will be installed on the remaining antennas later in 2017. Commissioning began with six first generation feeds (now replaced) in 2014, leading to the first scientific images from PAFs on an interferometer. Early science with a 12-antenna ASKAP array began in 2016. Full operation is planned for late 2017.

ASKAP is located at the Murchison Radio-astronomy Observatory (MRO) in remote Western Australia, a location chosen for its radio quietness, and where the Square Kilometre Array low frequency telescope (“SKA-LOW”) will be centred. CSIRO also hosts the Murchison Widefield Array (MWA) at the MRO. We acknowledge the Wajarri Yamatji people as the traditional owners of the Observatory site.

The Parkes Telescope, a 64-m antenna near Parkes, NSW, will shortly receive a new ultra-wide-band receiver operating over the range 0.7–4 GHz as part of an upgrade of all its receiving systems aimed at improving capability and decreasing operational costs. A PAF receiver at 1.4 GHz and a broadband high frequency receiver are also planned.

Observing with all the ATNF telescopes is now performed from the ATNF Headquarters in Sydney, or remote locations further afield. The ATNF telescopes can be combined with telescopes operated by the University of Tasmania into the Long Baseline Array, a continental scale VLBI interferometer.