



## URSI Extended Abstract Template

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The Long Baseline Array (LBA) is a VLBI array spread across Australia and the Southern Hemisphere coordinated by CSIRO. The core elements of the LBA are three CSIRO telescopes (Parkes, the Compact Array and Mopra); two telescopes of the University of Tasmania (the Hobart 26-m antenna and the Ceduna 30-m); the Hartebeesthoek 26-m in South Africa; and the Warkworth 12-m and 30-m antennas in New Zealand. When available, these are augmented by the 70-m and 34-m antennas at the Canberra Deep Space Communications Complex, and the University of Tasmania's 12-m 'AuScope' antennas. The LBA is also occasionally used part of an ad-hoc global VLBI array with telescopes from Asia and Europe, and regularly observes as part of the ground array supporting the Russian RadioAstron space VLBI mission.

The LBA has an "open sky" policy and observes for typically 25 days per year, with most of this time scheduled in four or five intensive sessions, interspersed with single observations as required. The majority of experiments are conducted at various frequencies between 1.4 GHz and 22 GHz, although ATCA and Mopra can observe at 43 and 86 GHz. The LBA currently takes part in occasional "global" VLBI experiments. Discussions are in progress to formalize this arrangement and make it simpler to include the LBA in international experiments. All LBA experiments (other than the RadioAstron and global experiments) are correlated by CSIRO staff using the DiFX software correlator running on a supercomputer at the Pawsey Supercomputing Centre in Perth.

In this talk, I will discuss the current capabilities of the LBA, as well as current and planned developments for the individual antennas, such as "Ultra-wideband" receivers for the Parkes telescopes, new GPU based digital backend for the ATCA and wideband receivers for the AuScope array.

In the era of the SKA, the LBA is well positioned to play a major role in VLBI follow-up of new discoveries. As well as continued technical improvements of the telescopes, the LBA is actively looking to play a continued role in global VLBI science.