

## NTD Interferometer Experiment at Marsfield

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### ABSTRACT

CSIRO ICT Centre and ATNF staff are jointly working on two projects that are on Australia's roadmap towards the Square Kilometre Array radio telescope (SKA). The major project currently is the NTD (New Technology Demonstrator), which is a preliminary to a much larger project known as xNTD (Extended NTD). This paper outlines an experiment currently being prepared for the NTD, and relies on the installation of two recently refurbished 13.7 m diameter antennas which will be fitted with various feed technologies resulting from CSIRO's research program into Focal Plane Array technology using fully digital beamforming techniques. The NTD and xNTD will be using critically sampled focal plane arrays (CSFPAs), a concept that offers promising solutions but it is not yet clear how well they may achieve these results. It is becoming apparent that artefacts such as coma, mutual coupling between elements, and the frequency dependence of the array will introduce new challenges which need to be compensated for with either the digital hardware or the following post-correlation software. The main goal of the initial observations with the NTD interferometer is to understand the performance of the CSFPA in both single dish and interferometric observations.