



# THE MWA LONG BASELINE EPOCH OF REIONISATION SURVEY: IMPROVEMENTS IN THE MWA EoRo FIELD

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One of the principal systematic constraints on the Epoch of Reionisation (EoR) experiment is the accuracy of the foreground calibration model. Recent results have shown that highly accurate models of extended foreground sources, and including models for sources in both the primary beam and its sidelobes, are necessary for reducing foreground power. To improve the source models in the EoR fields observed by the Murchison Widefield Array (MWA), we conducted the Long Baseline Epoch of Reionisation Survey (LoBES). This survey consists of multi-frequency observations of the main MWA EoR fields and their eight neighbouring fields using the MWA Phase II extended array. We present the results of the first half of this survey centred on the MWA EoRo observing field (centred at RA=0 hr, Dec=-27 deg). The resulting catalogue contains a total of 80824 sources, with 16 separate spectral measurements between 100 and 230-MHz. Over this region we estimate that the catalogue is 90% complete at 32 mJy. The overall normalised source counts are found to be in good agreement with previous low-frequency surveys at similar sensitivities. Testing the performance of the new source models we measure lower residual rms values for peeled sources, particularly for extended sources, in a set of MWA Phase I data. It is clear that the LoBES sky models significantly improve upon the current sky model used by the Australian MWA EoR group for the EoRo field.