

# MURCHISON WIDEFIELD ARRAY

## 32T EoR SCIENCE PROGRAM

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*MWA EoR Science Collaboration:*

*D. Barnes, J. Bowman, F. Briggs, C. Carilli, A. de Oliveira Costa, S. Furlanetto  
B. Gaensler, L. Greenhill, L. Hernquist, J. Hewitt (spokesperson), A. Loeb, C. Lonsdale  
M. Morales, S. Sethi, M. Tegmark, R. Webster, S. Wyithe, M. Zaldarriaga*

### 1. Introduction

This document describes the MWA EoR Science Collaboration’s program with the 32T-tile system of the MWA. The full MWA EoR experiment, to be carried out with 512 tiles, is described in another document. We assume that a 32T full-sky map is another WBS element.

The 32T EoR program is possible only when 32 tiles with data-over-coax beamformers are in place, and correlation is done with the 32T hardware correlator. The 32T EoR program does not require the RTS. For the purposes of planning in this document, we assume that the dates of two observing campaigns will be June 2010 and October 2010.

The major components of the plan are (WBS element numbers are in parenthesis; EoR.1 is the second-level WBS element for 32T EoR):

- 32T data taking and archiving (EoR.1.1)
  - Preparation for June 2010 observing campaign (EoR.1.1.1)
  - Execution of June 2010 observing campaign (EoR.1.1.2)
  - Preparation for October 2010 observing campaign (EoR fields) (EoR.1.1.3)
  - Execution of October 2010 observing campaign (EoR fields) (EoR.1.1.4)
- RFI mitigation (EoR.1.2)
  - Identify and eliminate sources (EoR.1.2.1)
  - Document characteristics of RFI (EoR.1.2.2)
  - Develop on-line code to edit data based on RFI (EoR.1.2.3)
  - Develop off-line code to evaluate data based on RFI (EoR.1.2.4)
- Instrument characterization (EoR.1.3)
  - Characterize system temperature (EoR.1.3.1)
  - Characterize bandpass (EoR.1.3.2)

- Characterize beam patterns via Orbcomm (EoR.1.3.3)
- Characterize beam patterns via drift scans (EoR.1.3.4)
- Characterize beam polarizations (EoR.1.3.5)
- Ionosphere characterization (EoR.1.4)
- EoR field analysis (EoR.1.5)
  - Deep maps of two EoR fields (EoR.1.5.1)
  - Bright source foreground subtraction - image plane (EoR.1.5.2)
  - Bright source foreground subtraction - uv plane (EoR.1.5.3)
  - Faint source foreground subtraction - uv plane (EoR.1.5.4)
  - Polarization leakage subtraction (EoR.1.5.5)
  - Power spectrum analysis (limit) (EoR.1.5.6)