

MWA News Update – 3 Sep 2010

MWA Project Meeting – 11-14 Dec 2010, Tempe, AZ

The next MWA Project Meeting will be held 11-14 Dec 2010 (Sat through Tues) at Arizona State University in Tempe, Arizona, hosted by Judd Bowman, now a faculty member at ASU. We are planning a full schedule of sessions and workshops similar to the Sydney meeting in order to wring as much value as possible from these infrequent occasions when a significant number of MWA people can get together under the same roof.

We recognize that the dates overlap the first two days (Mon-Tues) of the AGU meeting in San Francisco, which a number of our SHI colleagues wish to attend, and that this is less than ideal, but the dates are constrained by other factors. However, we will make every attempt to move SHI-interest sessions to Sat-Sun, and hope that the easy availability of at least 13 low-cost (\$89 one-way as of yesterday on kayak.com) 2-hour non-stop flights a day from nearby Phoenix to San Francisco will somewhat ease the pain.

RFI testing

RFI testing at the MRO site, which has been ongoing since late June, will conclude on 6 Sep. During the first part of the testing period, only CSIRO-developed testing equipment was deployed, and was later joined by ‘official’ SKA RFI-testing equipment. Since the arrival of the SKA equipment, new rules allow no site visitors until testing is concluded.

X14

Planning is in full swing for the next site visit, scheduled to start 14 Sep and continue for a bit more than two weeks. The agenda is a combination of engineering testing and science data collection. Among the engineering tests:

1. General system improvements and procedures that have been devised over the past few months of lab testing at Curtin will be tested. These improvements should improve the overall reliability and usability of the system.
2. A receiver outfitted with a full complement of eight Data over Coax (DoC) transceivers will be tested with 8 similarly outfitted beamformers of updated design; in addition to testing the functional capability of the DoC communications, several closely spaced tiles will be included in the tests to determine if the previous anomalous cross-correlation results between such tiles, suspected to be due to RFI leakage from the old communications system, have been cured.
3. Single-board LNA packaging for the antenna elements will be tested; this new board is intended to provide an option both to simplify the construction and improve uniformity of gain characteristics among antenna elements.

A science observing program is being organized by David Kaplan, who sent out an observing-request call to the project several weeks ago. Currently, the following observations are planned:

4. Daytime solar observations, led by Divya Oberoi, in order to capture additional interesting solar events similar to the very intriguing Type 3 flare that was observed and imaged in X13 in March 2010, which could lead to rapid turnaround of publishable results.
5. David Kaplan and Chris Williams are leading another set of nighttime EoR observations on the EoR1/Pic A field; these observations will be done on multiple nights to demonstrate repeatability and to cover multiple frequencies. The results of these EoR observations will be examined by multiple groups to examine viability/source counts in the EoR field, to verify/validate reduction procedures, and to help calibrate the primary beam.

6. Chris Williams will lead a set of observations targeted at defining a better primary beam model by fixing the tile beams to zenith and allowing the drifting beam to smear out all but several targeted brighter sources in the field.
7. Colin Lonsdale will lead imaging observations of a number of “A-list” sources across the full 80-300 MHz frequency band; the science goal is to measure the spectral shapes of the emission regions, allowing high precision spectral decompositions to be performed. This will require the development of a better understanding of frequency-dependent absolute flux calibration, as well as tackling any RFI issues in the more difficult parts of the band.
8. Steve Ord will lead observations using the new 2PiP equipment to capture pre-correlation full-bandwidth data at high-time-resolution in an effort to identify new short-period (~5 msec) pulsars.

Ground-penetrating radar (GPR) measurements are planned for the latter part of the site visit to map the depth of bedrock across the parts of the MWA site where trenching is being planned; these measurements will be used to help to design a trenching network that minimizes having to cut through hard bedrock.

The X14 team, as currently projected, includes Dave Emrich, Russ McWhirter, Ed Morgan, Prabu, and Steve Ord.

Science Council Update

A few recent changes have occurred in the make-up of the Science Council: The chairmanship has transitioned from Justin Kasper to Stuart Wyithe, Lynn Matthews has taken the position formerly held by Jackie Hewitt, and Lars Hernquist has taken the position formerly held by Max Tegmark. As of 12 Aug 2010, the membership of the Science Council is as follows:

Appointments ending in Jan 2011:

- Judd Bowman (ASU)
- Ilana Feain (CSIRO)
- Lars Hernquist (CfA/SAO)
- JP Macquart (Curtin)
- Tara Murphy (USyd)
- Anish Rishi (RRI)
- Shiv Sethi (RRI)

Appointments ending in Jan 2012:

- Matthew Bailes (Swinburne)
- Iver Cairns (USyd)
- Roger Cappallo (MIT Haystack)
- Justin Kasper (CfA/SAO)
- Lynn Matthews (MIT Haystack)
- Lister Staveley-Smith (UWA)
- Stuart Wyithe, chair (UMelb)

Successful CAASTRO proposal in Australia

The Australian Research Council has approved a proposal led by Bryan Gaensler of Univ. of Sydney for a Centre of Excellence in All-Sky Astrophysics (CAASTRO). The success of this proposal secures ~AU\$28M in funding over the period 2011-2017 to be shared between USyd, UMelb, Swinburne, ANU and ICRAR. These funds include support for ~25 FTE-years for postdocs, researchers and software developers to work on MWA EoR and MWA transients, along with associated funds for travel, administration, computing, etc.

MWA in the U.S. Astronomy Decadal Survey Report

As many of you may already know, the U.S. National Academy of Sciences has just released its recommendations for U.S. astronomy over the next decade (<http://www.nap.edu/catalog/12982.html>). The report endorses the progression of proposed instruments under the Hydrogen Epoch of Reionization (HERA) concept, under which MWA and PAPER represent HERA-I. If HERA-I is successful, the best elements of MWA and PAPER would be chosen for a progression to HERA-II starting in ~5 years at a first-order estimated cost of US\$85M. HERA-II would, in turn, set the stage for progression to a more comprehensive and capable HERA-III instrument further in the future.