

Addendum to Second Announcement of Opportunity 10/09/2014

Voltage Capture System (VCS) Observation Mode

The MWA continues to evolve as an instrument, and as such now has a new observational mode available from semester 2015A, for recording the full time and bandwidth resolution voltage data output from the fine Polyphase Filter Bank (PFB), the Voltage Capture System (VCS) mode. This addendum briefly describes the capabilities and limitations users can expect from this system, as well as relevant hardware and logistical details.

VCS Observations

When the VCS mode is used for observations, the critically sampled and digitised voltages per fine frequency channel (10 kHz frequency resolution and 100 us temporal resolution) are recorded to disk in separate files for each PFB lane (32 lanes). The individual files have 1 second boundaries.

As the available storage within the VCS is limited, observation schedules should be confined to 1-hour durations, regardless of how many pointings are scheduled. These data then need to be moved off the VCS in a manner that gives priority to 'standard' MWA network traffic. Therefore consecutive VCS observing schedules should be separated by at least 1 week. It is expected that ~ 20 hours of VCS usage will be available for semester 2015A.

What can users do with these data?

The MWA Operations Team support for VCS usage is limited to the collection of the voltage data themselves and provision of software capable of reordering the data into coarse channels, emulating the post-corner turned data within the correlator. This should not restrict what users do with their voltages. The VCS commissioning team has successfully processed voltage data into both coherent and incoherent beams, as well as correlating them 'offline' to achieve higher (50 ms) time resolution visibilities than standard MWA observations.

What do users need to prepare/supply for VCS observations?

The data from the VCS will be transmitted to a server housed at the Pawsey Centre in Perth, onto a RAID5 disk array built from user-supplied disks. Users will be expected to supply groups of 4-16 3.5" SAS drives to the MWA Project Office which will need to have a combined capacity greater than that of the recorded voltages (full recording rate of ~28 TB/hour) to account for overhead from the RAID. The MWA Operations Team will build the RAID set and transfer the VCS data to these drives. The Operations Team will ship the disks to the user (at the user's expense) once the observing project is complete. The user will be able to reconstruct the RAID set locally and retrieve the data.

A document containing the finer details of disk supply requirements and shipping requirements will be available on the MWA website before the end of the year. These details will not be required for the submission of observing proposals utilising the VCS.