

LWA-OVRO Calibration and Imaging

- **Stephen Bourke**
- Caltech

LWA-OVRO

- Located at the Owens Valley Radio Observatory
- LWA analog

hardware

LEDA digital

back end

• 2.3 * LWA1 in

extent

- Caltech & CfA
- Cross-correlation
- (no beam forming)



Science Goals





- All sky transient monitoring
- Space weather on exoplanets

- Epoch of reionization
- Constrain
 sky-averaged HI
 signal at z ~ 20

Caltech Data Processing



fppt.com

mlpflagger

- Developed by M. Eastwood
- Limited support surface fit to auto-correlations
- Generates heuristics to flag cross-correlations
- Currently standalone program
- To be integrated into dada2ms



dada2ms

- Developed by S. Bourke
- Converts correlator data to Measurement Sets
 - Time, Real/Imag, Freq, gpuBaseline, pol
 - Time, Baseline, Freq, pol, complex
- Calibration solutions applied on the fly
- Reasonably fast (~0.7s per integration per GPU)
- Soon to incorporate mlpflagger

CUWARP

- Developed by D. Mitchell, R. Wayth, S. Ord
- Direction dependent calibration and source subtraction
- Warped snapshot imaging
- Gridding to Healpix



WSClean

- Developed by A. Offringa
- Stand alone fast imager
- W-term correction (via W-Stack)
- Generates complex crosspol images
- Multiscale clean in development
- Produces FITS images

difengine

- Developed by M. Anderson, S.Bourke, K. Mooley
- Parallel, sky statistics generation, transient detection
- Long duration transient detection takes place later

Transient Searching

- Currently being implemented by M. Anderson
- Search for periodicity, transient events along time axis of regridded (Healpix) sky data

Archive and User Interface

- Developed by C. Mattmann, M. Soriano, S. Khudikyan
- Apache OODT based
- Stores meta data (via hooks), optional intermediate products, and output data
- Flexible user query system











