Discussion on TianLai Software and Data Management

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Tianlai Level 2 (**L2**) processing

Raw visibility data
[Vij (ν)]

(L1 output)

(A) RFI cleaning, time dependent gain/noise monitoring …

Cleaned / compressed visibility data[Vij (ν)]

Cleaned / compressed visibility data[Vij (ν)]

(L2-A output)

(B) Calibration on point sources

Calibration data (gain,phase)
Beam, Tsys
Cleaned / calibrated [Vij (ν)]

Calibration data (gain,phase)
Beam, Tsys
Cleaned / calibrated [Vij (ν)]
Array configuration

(L2-B output)

(C) Map making

3D sky maps I(α,δ,ν)
Synthetized beams
noise maps …

(L2 output)

Level 3 (**L3**)

(D) Component separation
Foreground/signal maps
and power spectrum …

From 2017 presentation
Simplified pipeline steps (from September 2016 presentation)

See April 2017 presention

Issues

- Data processing pipelines and software tools
- Corresponding documentation and examples
- Data Management : raw & processed storage, catalogues: meta data and organisation, data query and access , data sharing services

- Production: massive processing of raw data to create reduced data sets - pipeline validation, production of ancillary data, such as calibration files
- Production of data quality indicators (offline) - Examples : fraction of data RFI flagged data, both in time and frequency, gain and phase variations, per baseline noise level …
- Validation and sharing of reduced data sets, with corresponding meta data and data quality flags

How to progress

- A new test data production, either on Tianlai 01 @ Fermilab, or in UW computing & data center
- Select a small set of data (few days) , containing reasonably bright source transits
- Process the data using a validated version of the TLPipe
- Produce the calibration files, as well as reduced (time & frequency binned, calibrated) visibility data sets
- Validate calibration procedure (noise source + on sky)
- Aim for production of 3D map of a mid-latitude region