

LOFAR Calibration & Imaging Tiger Team

LSM Update, 18 March 2015
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Work streams

- AWImager
- Calibration
- Selfcal
- Ionospheric phase screens
- Facet calibration + pipeline

Status of different workstreams



■ **AWImager**

- Based on new version of NRAO casa
 - Now 4.2, final product will work with casa 4.4 (because of unified casacore)
- Available on a branch
 - On cep2/cep3: `. /opt/cep/tools/citt/lofarinit.sh`
 - On flits: `. /usr/local/citt-release/lofarinit.sh`
- Faster gridding method: Image Domain Gridding
 - Presentation from Bas will follow
 - Better suited for modern CPUs, tests show 10x speed improvement with intel compiler
 - CITT-deliverable: imager with both standard gridding (done) and IDG (working on it)

■ **Calibration**

- DPPP direction independent stefcal works
 - Available in DPPP, see DPPP wiki for usage
 - Multithreaded predict + beam
 - Bug in full jones, working on it
- Elevation dependent flux scale issues in beam model
 - Working on fix in beam model

Status of different workstreams

- **Selfcal**
 - Direction independent `selfcal.py` available on cep+flits
 - Version with peeling being finalized
 - Work stream will finalize this month
- **Ionospheric phase screens**
 - Tests have shown that this method will not perform as good as facet calibration for HBA data
 - This work stream has stopped within CITT
- **Facet calibration**
 - Method from Reinout van Weeren
 - Shown to work on two fields (Reinout + Wendy Williams)
 - 8 fields to be tested in Leiden workshop (April)
 - CITT work: make a pipeline from this strategy

More generic pipeline

Work by Stefan Fröhlich



- Extension of LOFAR pipeline framework
- Can specify pipelines / reduction strategies from one big parset
 - No coding required to run your own pipeline
 - Parallelism handled by framework
- Will make moving pipelines to observatory easier

The screenshot shows a window titled "demo-generic.parset" with a tree view of a parset file. The tree structure is as follows:

- pipeline
 - pluginpath: plugins
 - steps: [createmap, sourcemap, parmmap, dpppex, awiex]
- createmap
- sourcemap
- parmmap
- dpppex (highlighted)
 - control
 - parsetarg
 - msin
 - modelcolumn: MODEL_DATA
 - steps: [c]
 - c
 - caltype: fulljones
 - debuglevel: 2
 - detectstalling: False
 - maxiter: 50
 - solint: 5
 - stefcalvariant: 1c
 - tolerance: 1.e-4
 - type: gaincal
 - usebeammodel: True
 - usemodelcolumn: False
- awiex
 - control
 - parsetarg
 - cellsize: 40arcsec
 - niter: 1000
 - npix: 128
 - numthreads: 4

Calibration & Imaging Tiger Team (CITT) Timeline, update



- August, 2013: Project start
- February, 2014: Busy week
- June 26, 2014: Progress review workshop
- August, 2014: Busy week
- November, 2014: Busy week
- April, 2015: Facet Calibration Workshop, Leiden
- June, 2015: Progress review workshop
 - Facet calibration pipeline prototype
- August, 2015: Project end
 - Facet calibration pipeline ready for experienced users