ASTRON

Netherlands Institute for Radio Astronomy

LOFAR Calibration & Imaging Tiger Team

LSM Update, 8 July 2015

Tammo Jan Dijkema

Work streams

ASTRON

- AWImager
- Calibration
- Selfcal
- Facet calibration + pipeline

Status of different workstreams

ASTRON

- **AWImager**
  - Multi-scale multi-frequency clean
  - Two gridders
    - 'Classic' gridder: using convolutions in UV-plane ← available now
    - Image Domain Gridding, 10x speed improvement on CPUs ← available for testing
    - On GPUs another major factor seems to be possible ← needs work in CITT2
  - Available on a branch
    - On cep2/cep3: `. /opt/cep/tools/citt/lofarinit.sh`
    - On flits: `. /usr/local/citt-release/lofarinit.sh`
- **Calibration**
  - DPPP direction independent stefcal works
    - Multithreaded predict + beam, useful for large skymodels
    - Next step: calibration with sliding time window
  - Elevation dependent flux scale issues in beam model
    - First tests on fix show issues, to be worked out

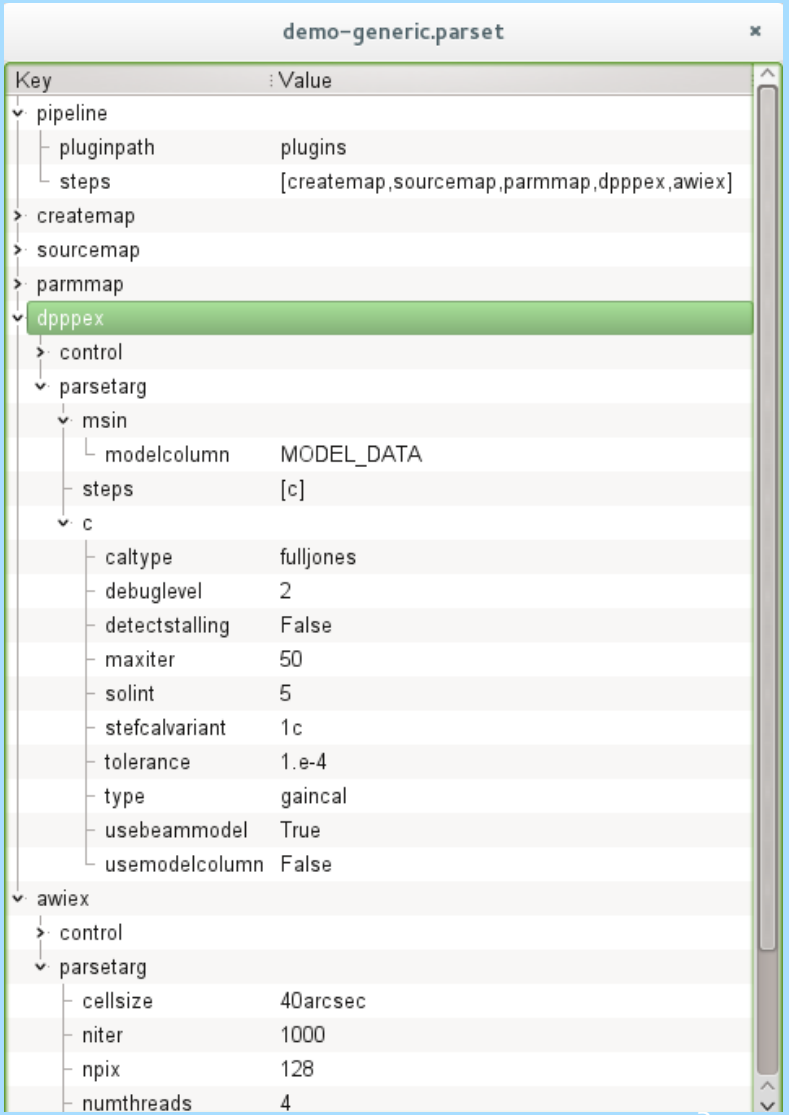
Status of different workstreams

ASTRON

- **Selfcal RO pipeline**
  - Only small bugs left, being characterized now
- **Facet calibration**
  - Method from Reinout van Weeren
  - Leiden workshop:
    - Collaboration on scripts
    - Good results on various fields
  - 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 developing and integrating pipelines easier



Calibration & Imaging Tiger Team (CITT) Timeline, update

ASTRON

- 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
- September, 2015: Project end
  - Facet calibration pipeline ready for experienced users
    - Accompanied with proper documentation
  - AWImager2 on LofIm, with Classic & Image Domain Gridder

- Start of CITT2

Plans for CITT2

ASTRON

- **CITT2 is continuation of CITT**
- **Plans to be finalized coming period**
- **Sketch of plans:**
  - Same setup (i.e. Tiger team, multi-disciplinary)
  - More focus on integration
    - Step 1: get pipeline framework rolled out
  - AWImager2 with GPU gridder
    - Promises major speedup w.r.t. current awimager, faster than casa and wsclean
  - Focus on directional calibration
    - Using image domain gridder for predict step → smooth directional effects
  - Focused work track on feasibility of LBA calibration