Bonn DiFX correlator report June 2015

DiFX Correlator status and operations

In Bonn all VLBI observations are processed using the **DiFX software correlator**.
The DiFX release being used presently is the latest release 2.4. The merging of the special Radioastron version to the "trunk" version by James Anderson from GFZ Potsdam is now in the testing phase. The aim is to offer the RA-version as part of the standard DiFX software.

Quick summary:
- 15 Mark 5s and 6 Mark 6s can be used for playback from disk modules. In addition data can be played back from presently 9 big RAID systems (~500 TB). This setup allows correlation of significantly more than 20 stations in parallel.
- All Mark 5s can playback all flavours of Mark 5 data (A/B/C).
- Playback from Mark 6 is still in an experimental stage. JIVE5ab 2.6 is installed.
- All Mark 5 systems have been upgraded to SDK 9.3a which allows the usage of bigger disks and more than 1024 scans. This was a requirement for the geodetic CONT14 session and very large modules.
- Data is archived on the MPIfR archive server in raw format, FITS, and MK IV (if desired). FITS (default) or MK IV formatted data is made available to the PIs. (HOPS software for handling MK IV format can be installed "at home".)
- Transfer of GMVA data to the VLBA archive for public access is nearly finished. Old MK4 correlated data was translated to FITS for this.

Correlator Cluster upgrade

The HPC cluster which runs the correlator is now 6 to 7 years old. A proposal for a new cluster was successful and new cluster with 1000 to 1500 cores will be installed Q4/2015. The call for tenders will be published end of June. We expect an increase in performance by about a factor of nearly 10.

Mark 6

- 6 Mark 6 recorders capable of recording at 16 Gbit/s will be installed in April in the newly built part of the correlator room. Correlation with data rates up to 64 Gb/s should be possible soon.

- 1 Mark 6 has been given to JIVE on loan for enhancing JIVE5ab to work as a "Flexbuff".

Capabilities

The capabilities of the DiFX software correlator can be found at **http://www.mpifr-bonn.mpg.de/771785/DiFX-CORRELATOR**

Operations

No backlog exits for geodesy. 0.8, 1and 3 mm observations are being correlated. RadioAstron correlation has a shrinking backlog of at present six observations from AO1 and five from AO2 (~3 months).

Test observations/correlations with the DBBC3 have started and will continue to the end of 2015. The aim is to record/correlate with up to 32 Gb/s with 3 telescopes.

Disks

To compensate for EVN disk modules used for Radioastron five modules of 32 TB each were added to the EVN pool in 2014. Eleven more modules (352 TB) for RA were added to the pool in April (all financed by ASC).