Bonn DiFX correlator report September 2016

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. For native Mark 6 recordings or special VDIF modes the development version is used.

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 8 big RAID systems (~740 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).
- Native playback from Mark 6 into the correlator is now possible. As an alternative the Mark 6 fuse file system can be used. JIVE5ab is installed for auxiliary tasks like copying of modules etc.; also works for Mark 6.
- All Mark 5 systems have been upgraded to SDK 9.4.
- RAID storage for correlated data is 57 TB.
- Data is archived on the MPIfR archive server in raw DIFX format, FITS, and MK IV (if desired). FITS (default) or MK IV formatted data is made available to the PIs.
- Transfer of GMVA data to the VLBA archive for public access is finished. Old MK4 correlated data was translated to FITS for this. Calibration data is being collected in a next step.
- Data transfer is used for "EVN" GMVA stations. For this another RAID is being procured at the correlator.
- Calibration transfer for GMVA data and a more streamlined initial data reduction pipeline is being worked on.

Correlator Cluster upgrade

The HPC cluster was upgraded in December. The system has 3 head nodes, of which 2 are for correlation, 68 nodes with 20 compute cores each (=1360), and Infiniband 56 Gbps interconnect. In addition the data RAIDS and Mark 5s work as data-stream nodes. More than one correlation can be run in parallel without problems.

Capabilities

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

Operations

No backlog exits for geodesy. The latest 0.8 and 1 mm observations are still being correlated. The RadioAstron backlog is 9 experiments. It will be cleared till the end of the year.

Further tests of the ALMA-GMVA mode are being correlated.

A successful observation with some VLBA stations was performed at 4 Gbps in the framework of the GMVA.

Disks

The two Mark 6 at Effelsberg were equipped with bigger modules (64 TB) for local storage of data. No Mark 5 modules will be bought any more as the Mark 5 system is becoming obsolete.