

MPIfR Correlator

Cluster specs:

- 1360 compute cores
- 1.7 Pbyte local storage (BeeGFS parallel filesystem)
- 3 head nodes
- 15 Mark5 playback units
- 9 Mark6 playback units

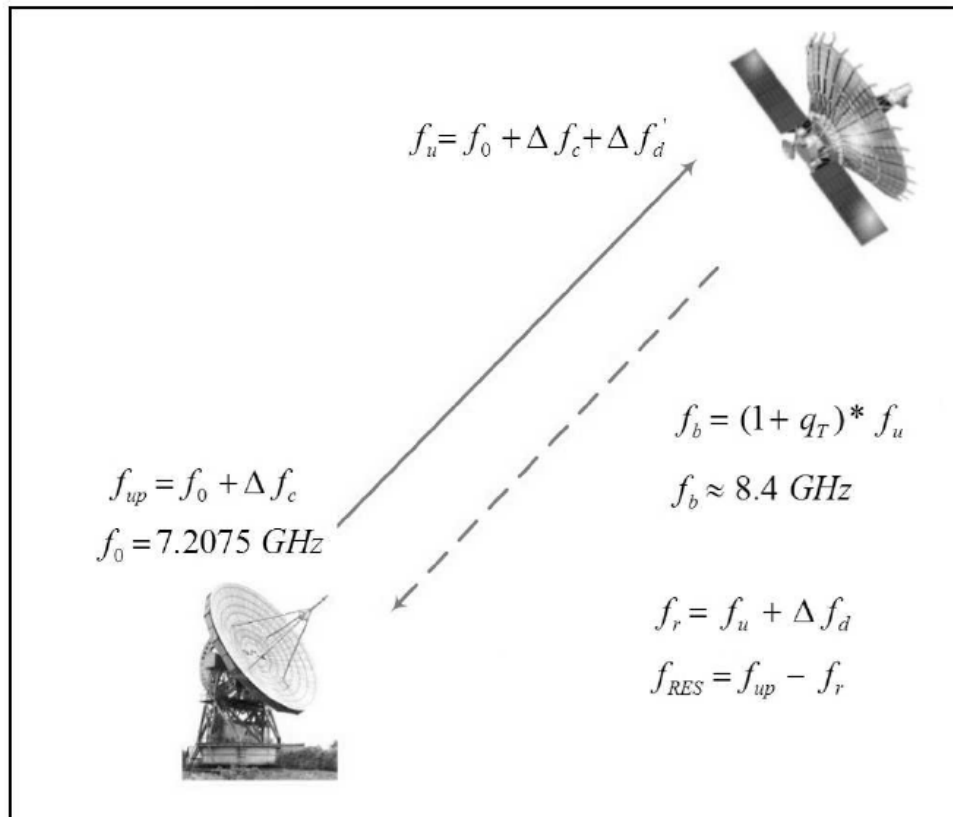
Usage:

- GMVA (3mm) correlation (2 / year)
- EHT (1mm) correlation (1 / year)
 - 50% split by frequency (other 50% correlated at Haystack)
- RadioAstron + Global: 47 experiments (17 pending)
- Geodesy: IVS correlator, EU-VGOS

DiFX activities

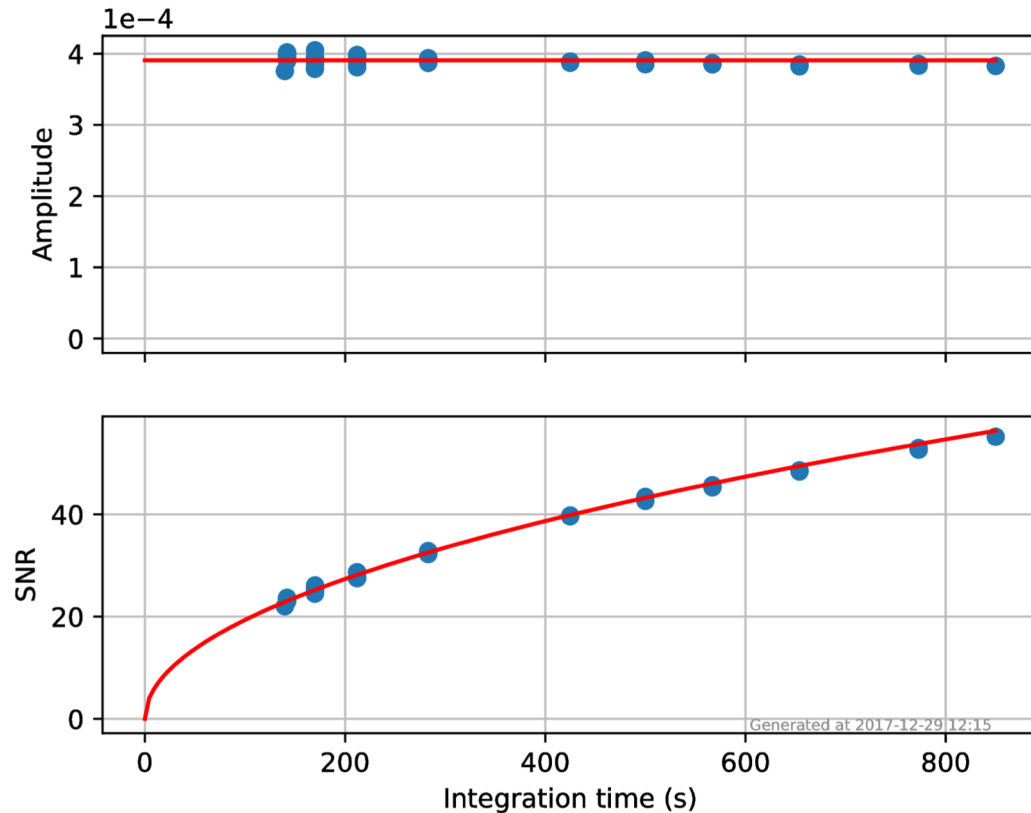
- Band forming (Jan Wagner)
- VDIF on-the fly thread-alignment (Jan Wagner)
- Pulse-cal extraction $< 1\text{Mhz}$ (Jan Wagner)
- Closed-loop calibration (Jan Wagner, Mikhael Lisakov)
- Mark6 support
- DiFXDB

Closed-loop synchronization mode



Likhachev+ 2017 [arXiv1706.06320]

raks18cj(K) RADIO-AS / GBT-VLBA [2017-10-19 09:00 UTC]

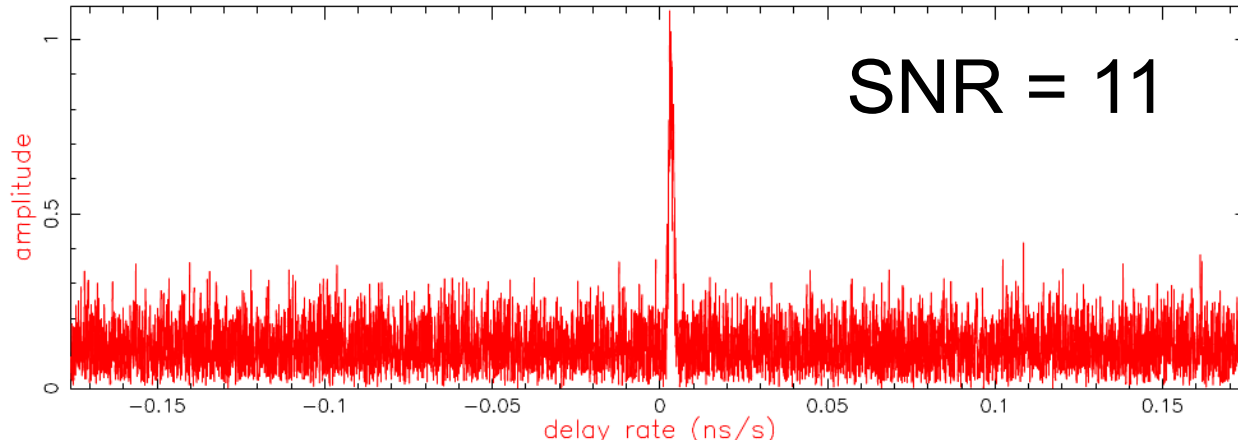


Generated at 2017-12-29 12:15

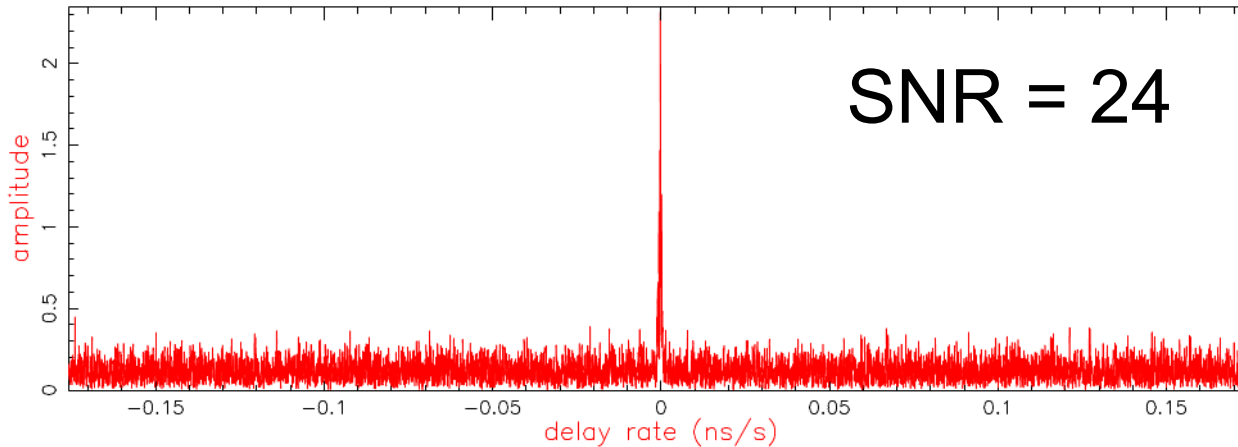
DiFX implementation

- ASC provides the delay polynomials derived via differential Doppler measurements
- They are applied to the initial CALC9 delay model derived by DiFX (.im file)
SVN: raPatchClosedLoop.py
- The updated delay model file retains CALC9 delay term and uses higher order coefficients from ASC
- The correlation is run with normal DiFX-RA 1.0.x and '--dont-calc'
- The delay model may be further improved with residuals from PIMA fringe fit
- A test experiment RAKS18CJ (closed-loop and Rubidium sync modes) was successfully correlated at MPIfR and compared to the ASC correlator output. The fringes were found in both sync modes and at both 1 and 6 cm

RAKS18CJ at 1cm



ASC-provided
Delay and Rate



PIMA-corrected
Delay and Rate