GMVA CORRELATOR REPORT

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STAFFING

- Bertarini has ended her contract on doing astronomical correlation (GMVA & EHT) end of 2016.
  - Jan Wagner has joined MPIfR on May 2\textsuperscript{nd} 2017
  - 1-2 new support scientist positions currently being filled.
  - GMVA correlation currently done by Alef/Rottmann/Wagner
- Bruni (Radioastron correlation) has ended his contract in on May 19\textsuperscript{th} 2017.
  - Rebecca Azulay started Jan 2017; has taken over RadioAstron correlation
SESSION REPORT: MARCH 2017

- Results online: [https://deki.mpifr-bonn.mpg.de/GMVA/GMVA_correlations/2017_March_(c171)](https://deki.mpifr-bonn.mpg.de/GMVA/GMVA_correlations/2017_March_(c171))
- March 2017 session consists of seven parts:

<table>
<thead>
<tr>
<th>Exp</th>
<th>block code</th>
<th>DOY</th>
<th>UT</th>
<th>Stations</th>
<th>Status</th>
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<tbody>
<tr>
<td>MN001</td>
<td>c171a</td>
<td>89-90</td>
<td>08:30-01:30</td>
<td>Eb, Yb, On, Mh, KVN, GB, VLBA</td>
<td>Fringe search</td>
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<tr>
<td>MA009</td>
<td>c171a</td>
<td>89-90</td>
<td>22:00-13:00</td>
<td>Eb, Yb, On, Mh, Pv, GB, VLBA</td>
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<tr>
<td>MB005</td>
<td>c171b</td>
<td>90</td>
<td>09:30-24:00</td>
<td>Eb, Yb, On, Mh, Pv, GB, VLBA, Nt (7mm)</td>
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<td>c171c</td>
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<td>19:00-18:20</td>
<td>Eb, Yb, On, Mh, Pv, KVN, GB, VLBA</td>
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CORRELATION: STANDARD MODE

Frequency setup:
- KVN: 8 x 32 MHz
- All other stations: 16 x 32 MHz

Very! preliminary results:
- c171a
  - Fringes between all stations except Pt (only weak fringes)
  - KVN data not yet arrived at time of fringe check
- c171b
  - Fringes between KVN stations
  - Fringes between Gb-On
  - Fringes for Eb On Pv Ys
  - No fringes yet for Mh
- c171c
  - Fringe search not yet started
CORRELATION: ALMA MODE

Frequency setup (dual pol)
- DBBC2: 1 x 512 MHz
- VLBA: 2 x 128 MHz
- ALMA: 32 x 62.5 MHz, overlapping (eff. bandwidth 58MHz), 125 MHz sampling

New challenges:
- New DBBC2 fullband mode
- Fullband mode requires channel reordering by Fila10G
- VLBA uses 2x128MHz mode
- ALMA records linear => will need processing by PolConvert
Despite the challenges we have ...fringes to ALMA (Aa-Ef-On)
CORRELATION: ALMA MODE – CONT.

- DBBC2 fullband mode problems at PV, YS, Mh
  - bad statistics at startup (e.g. @PV close to 100% in high-state), OK after system restart (DBBC2 & Fila10G)
  - corrupted autocorrelations:

  ![Graphs showing autocorrelation spectra for Pico Veleta, Yebes, and Metsahövi.](image)

**Issue is under investigation**
- Did not happen at Ef and On
- Did not happen during the tests in 2016/2017
Despite the corrupted auto-correlations there are (probably) fringes to Mh. There is still a chance that fringes will be found also to Pv and Ys.
GENERAL REMARKS

- PV recorded spring 2017 session on Mark6 due to broken DBBC2. No problems encountered during recording & correlation.
- Effelsberg has taken data with DBBC2 and R2DBE in parallel. RDBE fringes much weaker than for DBBC2
- DiFX setup for ALMA mode correlation requires special parameter tuning. Needs to be investigated further.