

# Various recent LOFAR observations

## And other more-or-less relevant tidbits

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LSM 20081029

1 HBA tracking / pulsar decorrelation

2 Frequency mosaicing

3 Arie Huijgen CS001 drive-by

4 RS307 Witteveen

5 Open problems

- Already a long time an issue
- Discovered in spring by Ramesh / Ben
- Appears as if tiles do not track
- Pulsar S/N decreases much more rapidly than expected

# Something obvious

```
[lofartest@CS010C etc]$ svn log BeamServer.conf
-----
r299 | (no author) | 2008-10-15 13:34:43 +0000 (Wed, 15 Oct 2008) | 1 line
-----
r298 | (no author) | 2008-10-15 11:57:18 +0000 (Wed, 15 Oct 2008) | 6 lines
Changed HBA_INTERVAL to 900 seconds for observation starting on 20081010.

Changed by: Yuan Tang
Committed by: Michiel Brentjens
-----
r256 | (no author) | 2008-06-09 12:42:50 +0000 (Mon, 09 Jun 2008) | 6 lines
Effectively disabled automatic steering of HBA tile beam by beamserver.
This changes MUST be un-done after the observation of 20080609-20080610 is
finished.

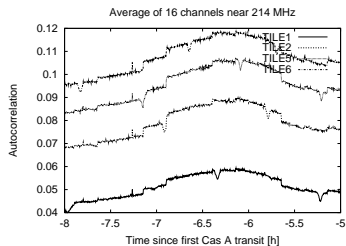
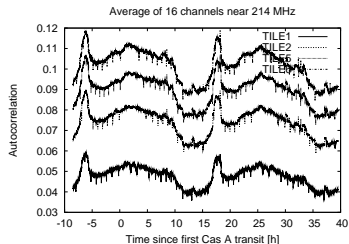
Michiel Brentjens
-----
r250 | (no author) | 2008-06-02 10:46:20 +0000 (Mon, 02 Jun 2008) | 2 lines
Effectively switched off HBA delay setting for internal RFI measurement.
-----
r58 | (no author) | 2008-03-06 12:53:27 +0000 (Thu, 06 Mar 2008) | 5 lines
Restored settings to normal synthesis imaging mode.

Michiel Brentjens
-----
```

```
index: BeamServer.conf
-----
--- BeamServer.conf      (revision 255)
+++ BeamServer.conf      (revision 256)
@@ -20,7 +20,7 @@
#      normal HBA_INTERVAL >= 10, for testing min. value = 2
#
BeamServer.DISABLE_SETHBA=0 # before is 0
-BeamServer.HBA_INTERVAL=3600
+BeamServer.HBA_INTERVAL=100000 #20080609 changing to 100000; before is 10
#
# Gain of the beamformer
```

ehm... oops.

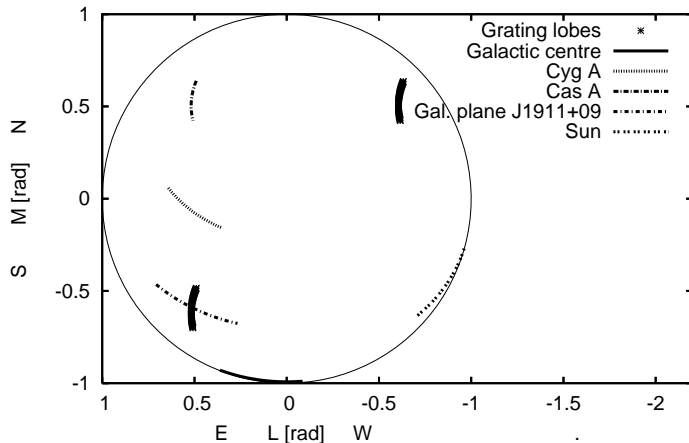
# Are we tracking, anyway?



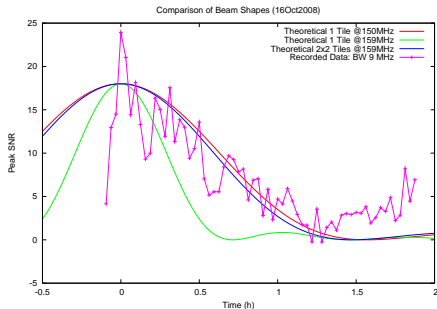
- L2008\_09202
- HBA interval 900 seconds
- 214 MHz
- We do see HBA tile updates every 900 seconds: we track!
- Sharp peak observed ?!?!? we do not track?
- Or is there something moving through grating response?
- Sun? Cyg A? Galactic centre? Galactic plane?

# HBA tile tracking appears to work!

Sky tracks and grating lobes during total power peak at 213.477 MHz



# New pulsar observation d.d. 20081016



Tom Hassall (Manchester)

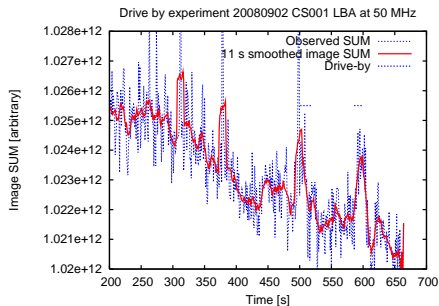
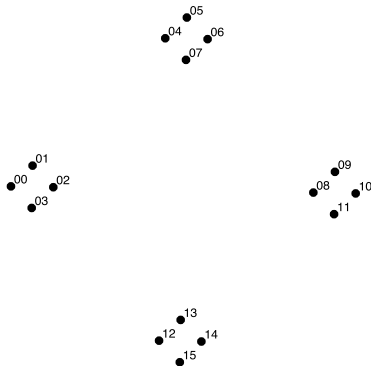
- *Still* decorrelation
- If tile beam is tracking, is station beam tracking too?
- What about the increase in S/N at end of obs?
- Is there some phase offset of the tiles?
- What is de delaycompensation / fringe stopping system at CEP doing?
- Something else?
- First try pulsar observation with single, tracking tile, and see if we understand that.

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- Requested by Pandey
- 6 frequency combs at LBA frequencies
- Observe each comb for 4 hours
- Target NCP
- Repeat after one sidereal day
- First day of observing successful, second day only one MS
- Switching configuration took less than 1 minute (46 seconds actually), dominated by startup of correlator process

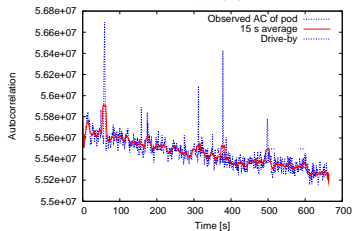
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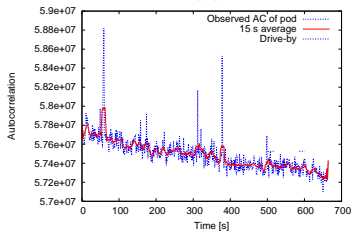
## CS001: LBA

# Individual microstations

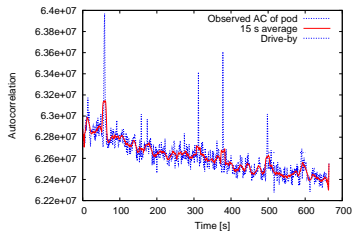
Antenna 0 - 3



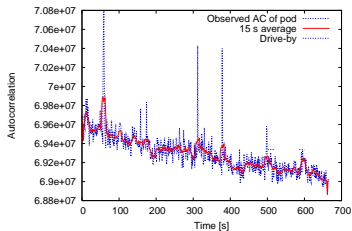
Antenna 4 - 7



Antenna 12 - 15



Antenna 8 - 11



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- Field flattened
- Except marshy area around cabinet location
- Proposal: move HBA field and cabinet somewhat south
- Next few days: verification of flatness by Azimuth and installation of wooden stakes indicating LBA/HBA positions.

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- Pulsar decorrelation (Ben Stappers, Joeri van Leeuwen, Jason Hessels, Nicolas Pradel, Michiel Brentjens)
- Autocorrelation dips (Michiel Brentjens)
- Ionospheric absorption (Ger de Bruyn)
- HBA tile delay read-back not reliable (Eric Kooistra)
- TBB still have some problems.