

# Radio observatory report and current LOFAR issues

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LOFAR status meeting 20090624

- 1 Observatory status
- 2 Status of issues
- 3 First Fringe take (II)
- 4 LOFAR as a MADAR
- 5 Observation queue

## System

- CS302 more or less transferred to RO
- CS016 will be decommissioned shortly
- RS503 and RS307 in hardware validation
- RS503C and RS307C reachable over ssh from liifen
- 500 Mb connection established to Effelsberg, no login yet from liifen.

## Observations

[L2009\\_13088–13091](#)

CS302–CS010 fringe test

[L2009\\_13133](#) HBA stability / AC dips test

[TBB busy week](#) mainly tbb2h5 work

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- CalServer occasionally crashes on CS302 (Overeem, Norden). Also present in test environment. Not present in ITRF CalServer. Workaround: switch off CalServer on all stations until ITRF CalServer is rolled-out.
- RSPDriver crashes when closing stats window with all RCUs at CS302 (Overeem, Mol) solved on CS302 svn 13434, but Norden still has occasional problems on RS307 and RS503.

# Bug list ((almost) EXPLAINED)

- CS010 unreliable/needs repeated commands before settings “stick” with RCUs. Possibly problem in rspctl. Also observed in CS001 and CS302 (Overeem). hba-write command may not be in same second as rspctl rcu commands. hba update to 10 seconds, real fix in progress.
- Signal paths of even RCUs can jump between a high and low state (LBL/LBH switch broken (by ESD?)). New RCU: ESD diode, and no trafo’s. Needs more research. Switches are of same type as faulty HBA delay boards. Why only even RCUs: unexplained.
- Phase jumps in waveform generator test at 200 MHz clock (Eric Kooistra, Brentjens) Test observation in queue.
- Non-hermiticity in ACM blocks of intra-RSP board visibilities in waveform generator tests (Overeem, Kooistra, will be fixed in RSPDriver)

- Occasional timestamp jumps of 1 in CS302/RSP0 data sent to CEP. Due to CRC errors? (Kooistra, Romein)

# Bug list (OPEN)

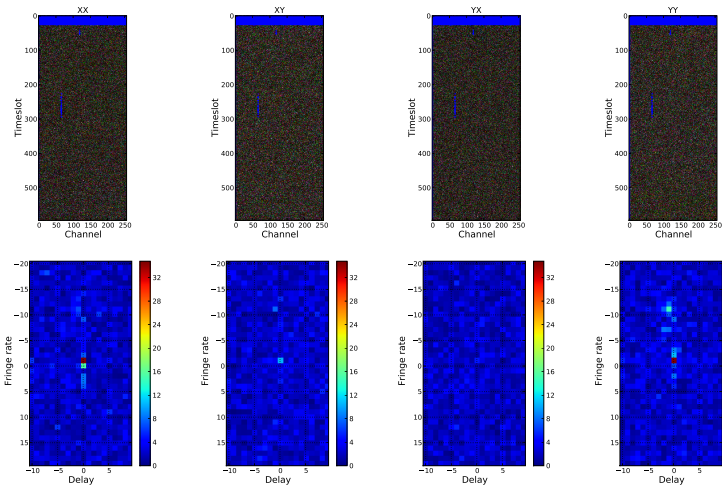
- Steps in delay w.r.t. Nancay
- Very strange, possibly internal RFI (Pandey dataset) Investigated by Harm-Jan Stiepel. Cabinets at CS1 are leaking enormous amounts of RFI. No action will be taken to mitigate this. Go and measure CS302 as soon as it is available
- TP variations/ionospheric absorption (Ger de Bruyn)
- No fringe at long baselines (James Anderson, Jean-Mathias Griessmeier, Nicolas Pradel)
- AC oscillations Pandey (nobody working on this)
- AC dips (Michiel Brentjens, PSR group. Useful data taken in second psr busy week)

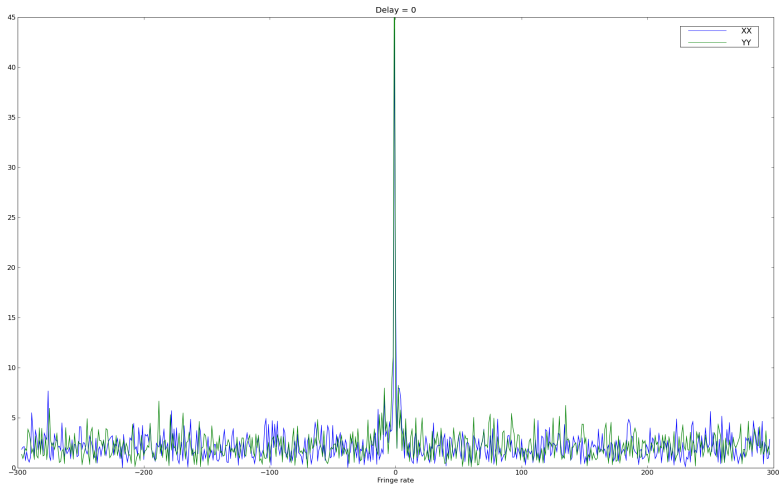


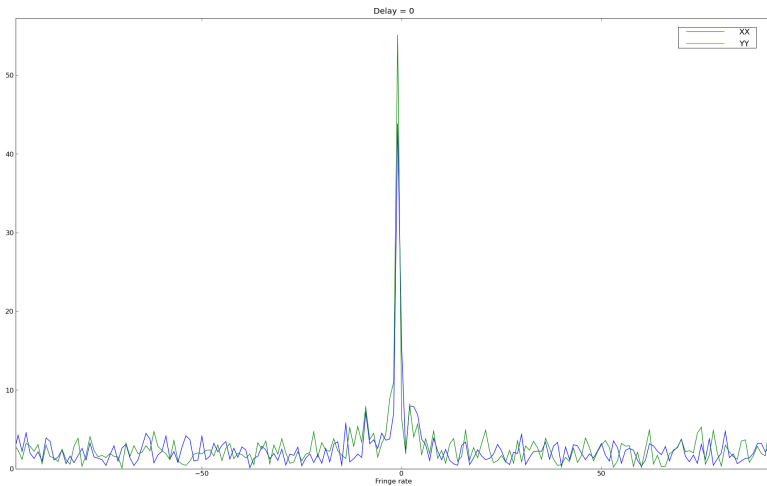
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# First fringe? take (II)

L2009\_13088, SB0.MS: 39.062 MHz

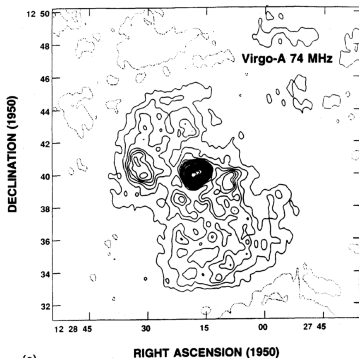






# Discussion

2226 KASSIM *ET AL.*: HIGH RESOLUTION 74 MHz IMAGING



(a)

- Assuming 60 kJy SEFD for LBA inner at 40 MHz
- Noise single pol 600 s, 95% of data, 195 kHz bandwidth: **5.7 Jy**
- Peak XX: 43.7 LU, YY: 55.0 LU
- Noise: 1.7 LU  $\Rightarrow$  1 LU  $\approx$  3.35 Jy
- Apparent Stokes I: 330 Jy
- Compact source 40 MHz: 414 Jy
- Elevation max. 50 degrees  $\Rightarrow$   $\cos(50) = 0.64$
- "Real" flux  $\approx$  515 Jy

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- Why instrumental polarization? We observed 30 minutes before transit (or so I thought)
- Why don't we detect the extended (multi-kJy) emission? We have a  $250\lambda$  baseline, which corresponds to scales of 10 to 20 arcminutes

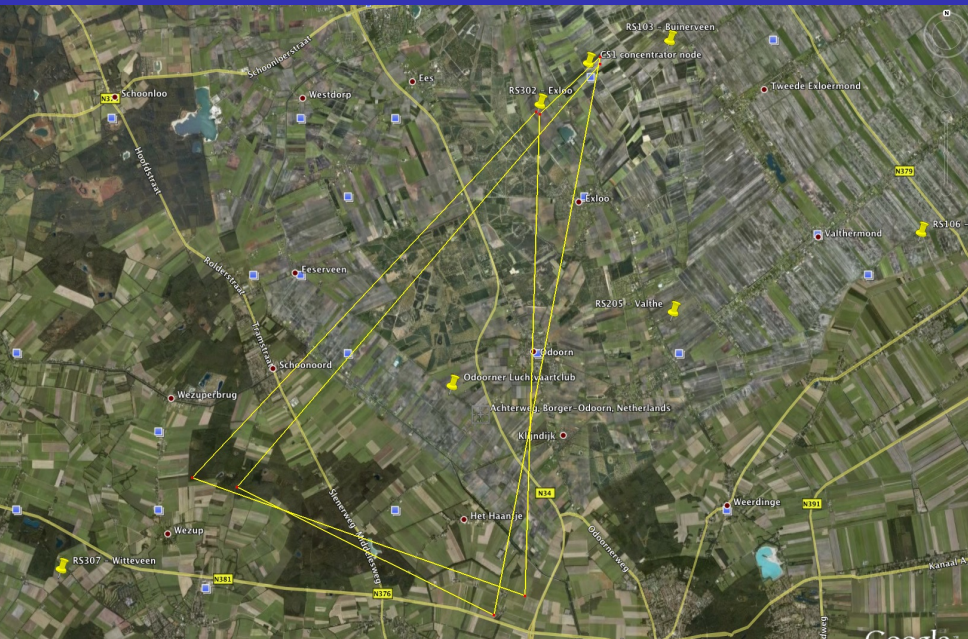
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- 27, 30, 35, 40 MHz
- More intense 27 MHz than previously
- New RFI at 35 and 40 MHz
- Eric Kooistra: “Aren’t those model airplane frequencies?”



## LOFAR: highly overpriced Model Airplane Detection And Ranging

# Where Oh Where



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# Observation queue

ID	Title	PI	Activity	Status	Creator
<b>now</b>					
94	Observations for 2nd TBB busy week	horneffer	1/2 an hour ago	accepted	horneffer
84	TBB testing and debugging of tbb2h5 program (data transfer in socket mode)	corstanje	6 days ago	observed	corstanje
92	New beamctl test: properly initialises FIFOs with cable delays	brentjens	7 days ago	scheduled	brentjens
<b>coming-days</b>					
67	Verify source of phase jumps in waveform generator test at 200 MHz clock	brentjens	1 week ago	scheduled	brentjens
11	Max. bandwidth observation	gunst	3 weeks ago	accepted	gunst
46	CS302 Station Verification with Pulsars 3: Tile Out Single Ear Primary With Tied-Array Fan Beams (of Two Ears)	stappers	3 weeks ago	accepted	hessels
45	CS302 Station Verification with Pulsars 2: Two Beams One From Each HBA Ear	stappers	3 weeks ago	accepted	hessels
<b>next-week</b>					
85	1/4 s Correlator Software Test	broekema	7 days ago	accepted	anderson
13	Single second all sky survey with TBBs	swelles	2 weeks ago	accepted	brentjens
59	TBB Trigger testing and readout on CS001C	corstanje	3 weeks ago	specified	corstanje
8	test dataset for trigger algorithm of UHEP mode of CR	singh	3 weeks ago	accepted	singh
7	Test dataset for PPF inversion	singh	3 weeks ago	accepted	singh
32	JEEJOANS (Joint Exloo-Effelsberg Jupiter Observation, and Nancay Spiral-antennae)	griessmeier	1 month ago	specified	griessmeier
<b>next-month</b>					
4	Station imaging campaign	wijnholds	1 month ago	accepted	brentjens
56	ITRF BeamServer functionality test	brentjens	1 month ago	accepted	brentjens
6	100hrs of pulsars (WR)	leeuwen	2 months ago	accepted	leeuwen
5	Frequency mosaicing experiment	pandey	3 months ago	specified	brentjens
<b>sometime</b>					
43	Test 12 microstationmode using SAS/MAC	schoenmakers	1 month ago	specified	kuper
<b>observed</b>					
51	SAS Mac tests	schoenmakers	yesterday	archived	kuper
31	conversion of data format from .out to .cor for pulsar dataset	singh	7 days ago	archived	singh
79	Transient Buffer Board read outs	eikelboom	7 days ago	successful	eikelboom
68	Storage software test	broekema	1 week ago	successful	broekema
65	Storage software test	broekema	1 week ago	successful	broekema
22	First TBB HDF5 writing test through socket interface	horneffer	1 week ago	observed	brentjens
76	Testing of tbb2h5 DAL routine in socket mode for reading TBB data	corstanje	2 weeks ago	processed	corstanje
77	Transient buffer board read outs	eikelboom	2 weeks ago	processed	eikelboom
72	Testing of socket mode for reading TBB data	eikelboom	2 weeks ago	successful	eikelboom