

Post-Calibration LBA Pulsar Observations

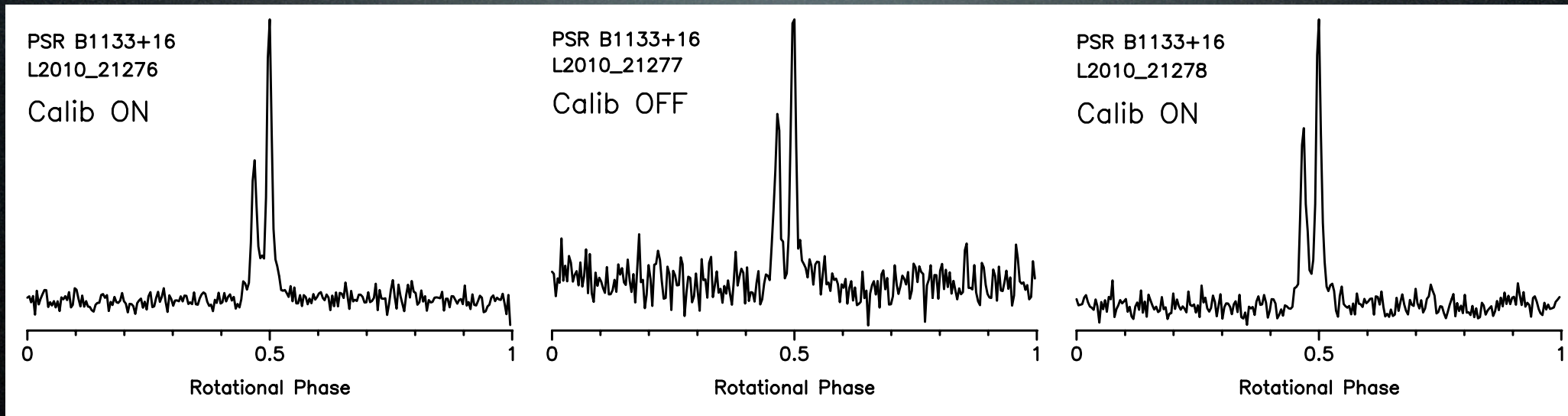


Jason Hessels

on behalf of

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LBA Station Calibration and related results

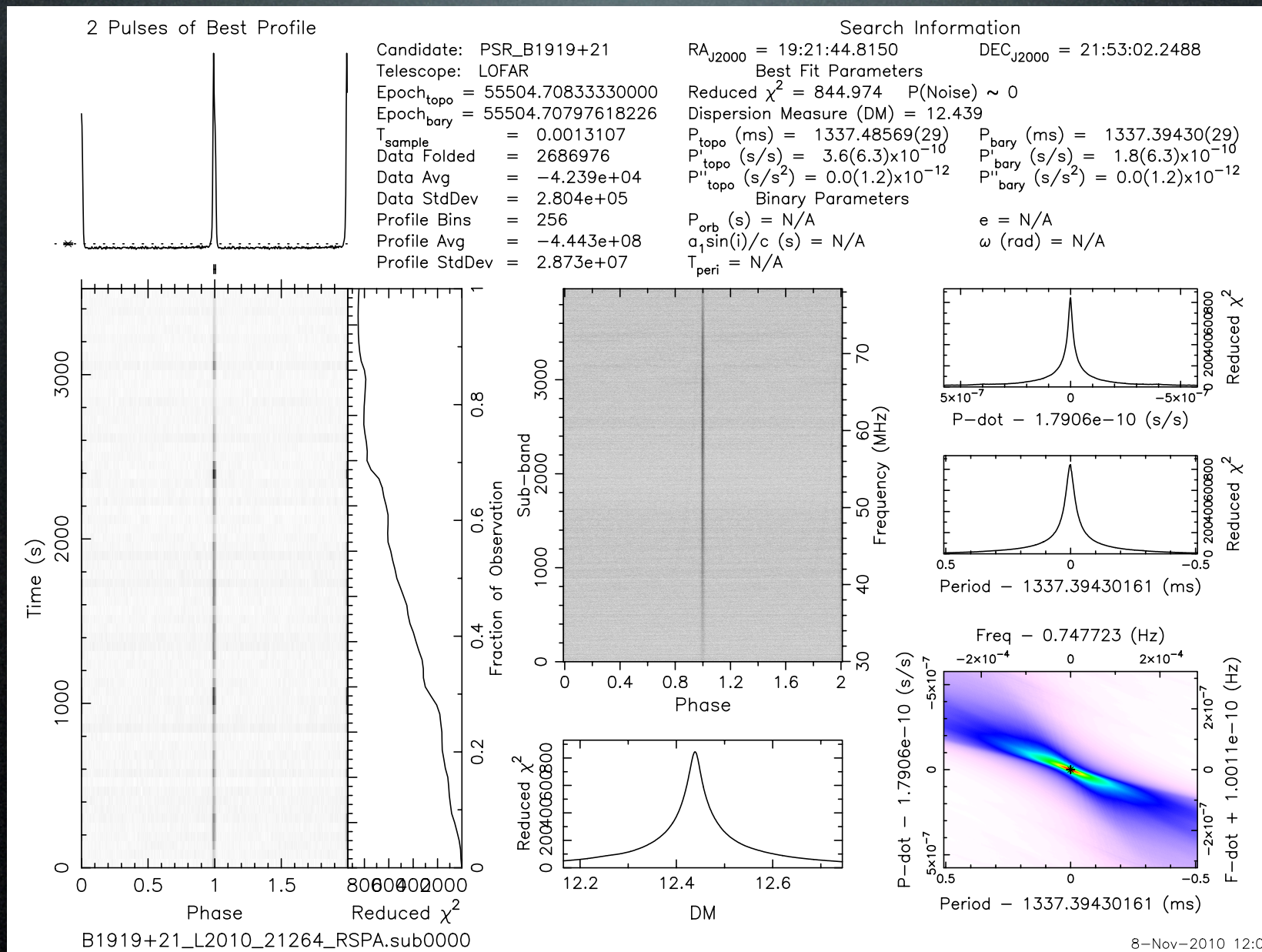


Consecutive observations
Roughly a factor of 3 increase in SNR!

5 stations summed: CS007,024,030,032,RS106

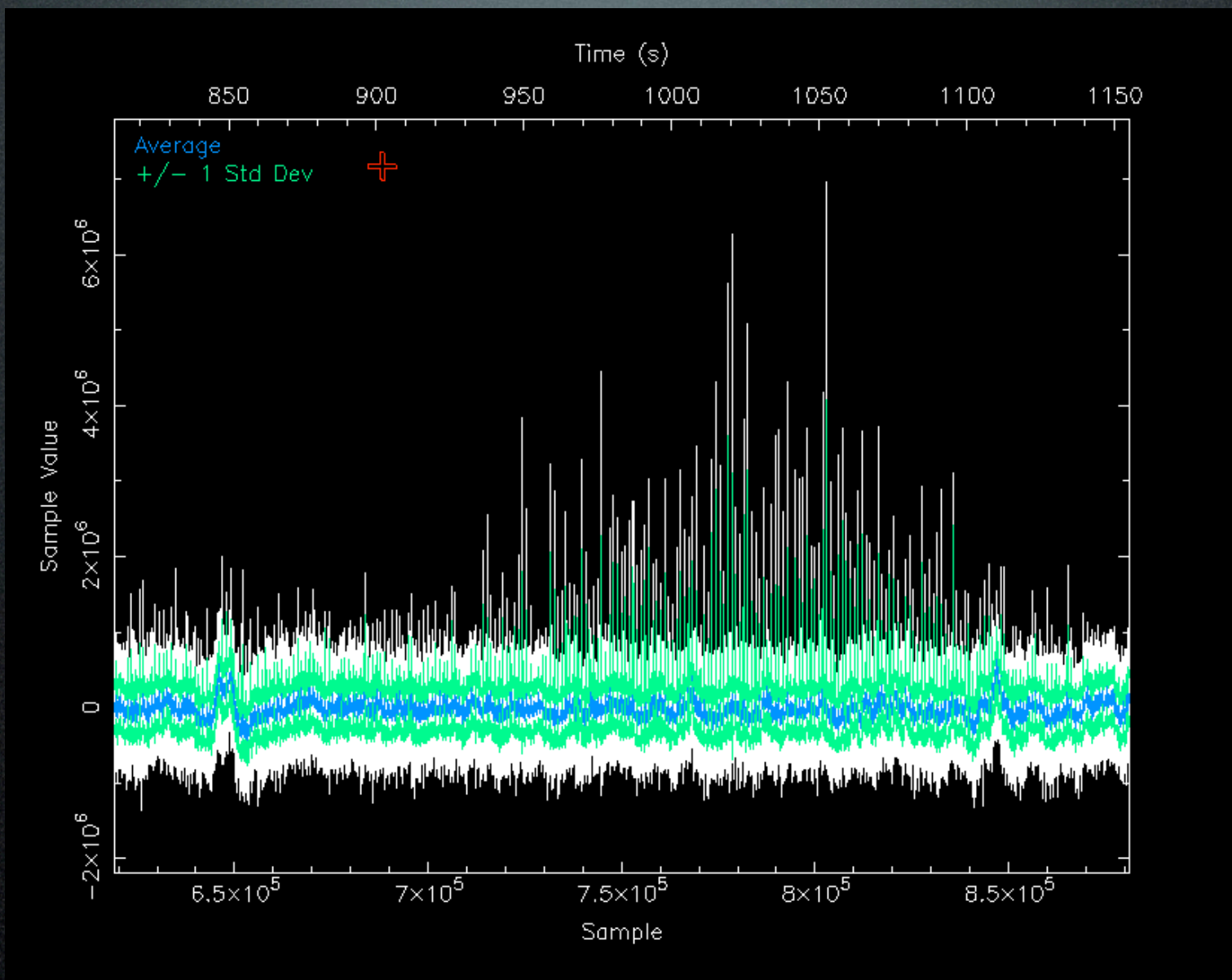
Similar HBA tests are planned soon!

LBA Station Calibration and related results



All-time best LBA detection of any PSR - Next try at 10-30MHz!

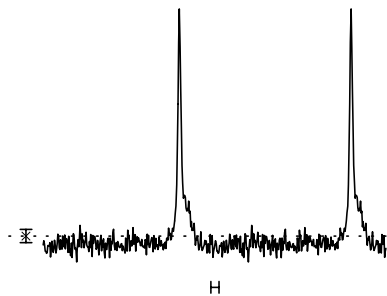
LBA Station Calibration and related results



Periods with bright single pulses.

LBA tracking issues or something else?

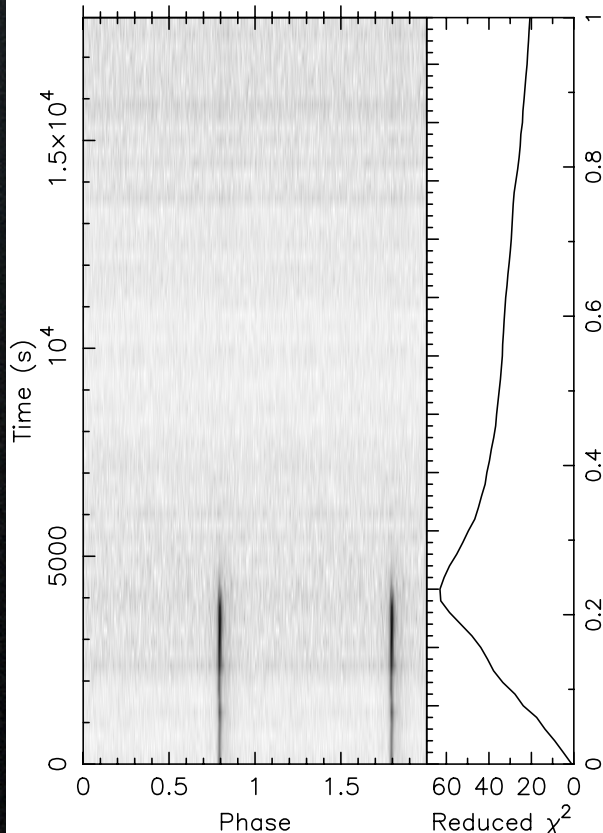
2 Pulses of Best Profile



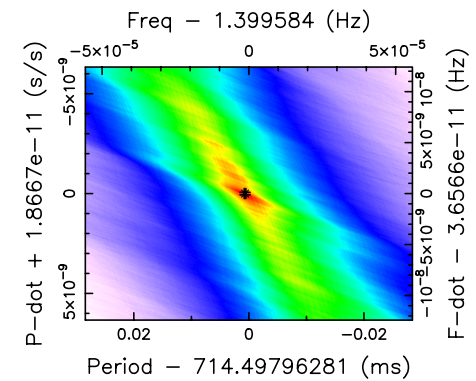
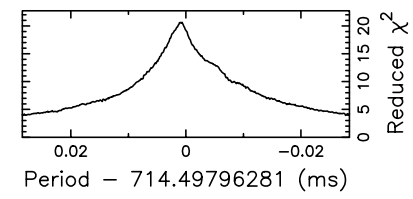
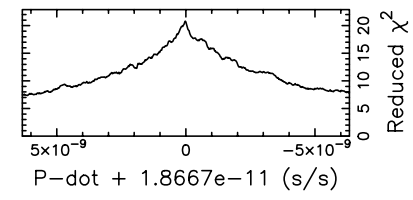
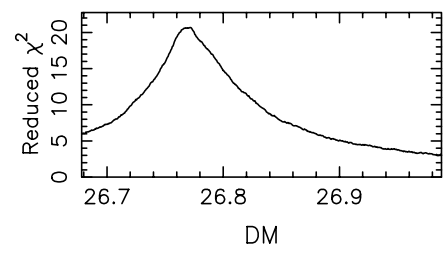
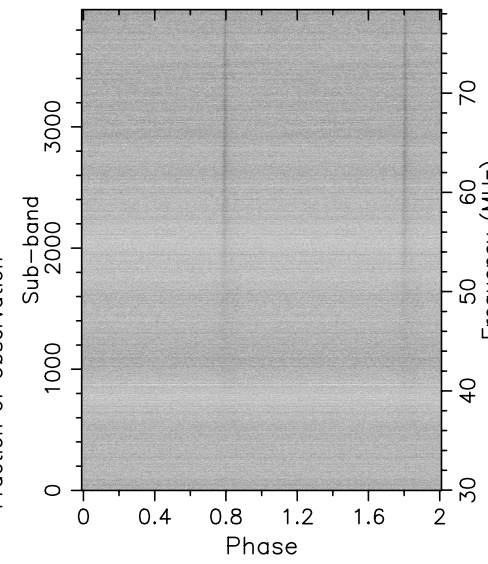
Candidate: PSR_B0329+54
 Telescope: LOFAR
 Epoch_{topo} = 55504.84027780000
 Epoch_{bary} = 55504.84539631120
 T_{sample} = 0.0013107
 Data Folded = 13697024
 Data Avg = -1.178e+05
 Data StdDev = 2.41e+05
 Profile Bins = 256
 Profile Avg = -6.303e+09
 Profile StdDev = 5.574e+07

Search Information

RA_{J2000} = 03:32:59.3600 DEC_{J2000} = 54:34:43.5000
 Best Fit Parameters
 Reduced χ^2 = 20.670 P(Noise) \sim 0
 Dispersion Measure (DM) = 26.772
 P_{topo} (ms) = 714.47529(14) P_{bary} (ms) = 714.49863(14)
 P'_{topo} (s/s) = -3.7(6.2)x10⁻¹¹ P'_{bary} (s/s) = -1.9(6.2)x10⁻¹¹
 P''_{topo} (s/s²) = 0.5(2.3)x10⁻¹⁴ P''_{bary} (s/s²) = 0.0(2.3)x10⁻¹⁴
 Binary Parameters
 P_{orb} (s) = N/A e = N/A
 a₁sin(i)/c (s) = N/A ω (rad) = N/A
 T_{peri} = N/A



B0329+54_L2010_21272_RSPA.sub0000



Transit

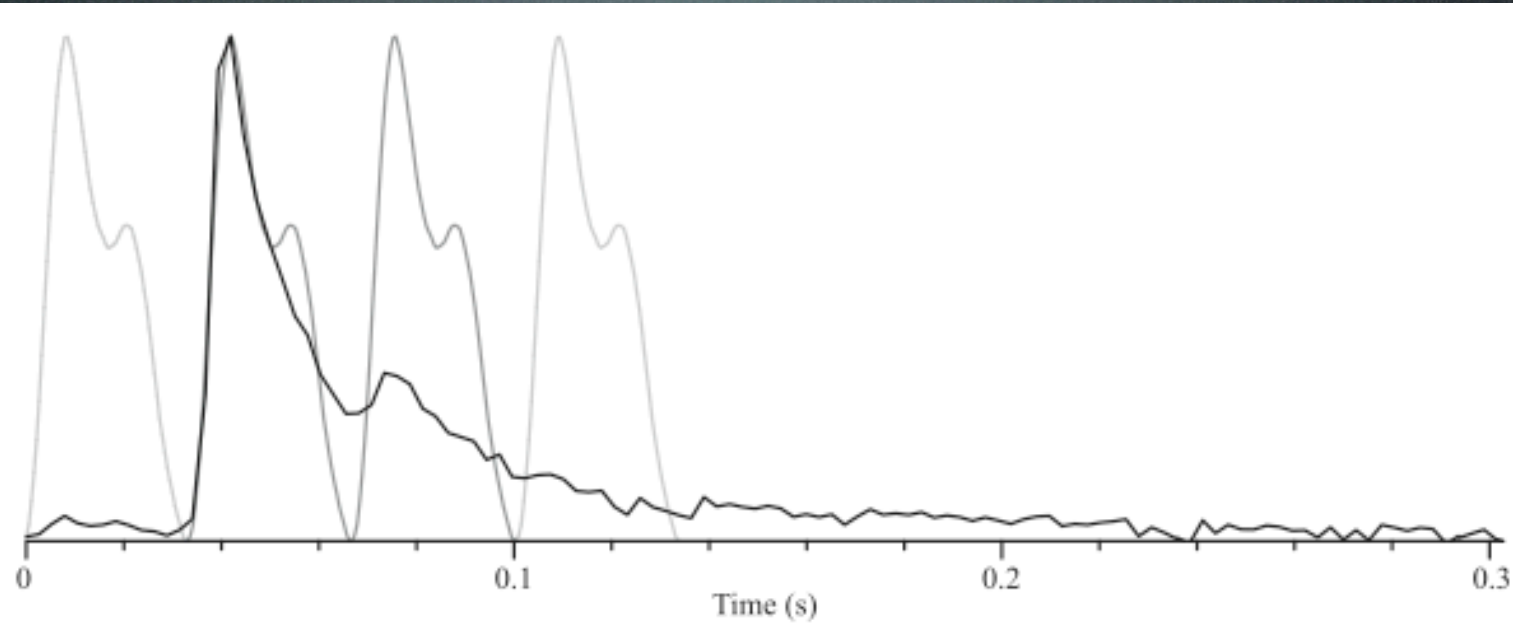
Beam Duration in MoM

8-Nov-2010 20:56

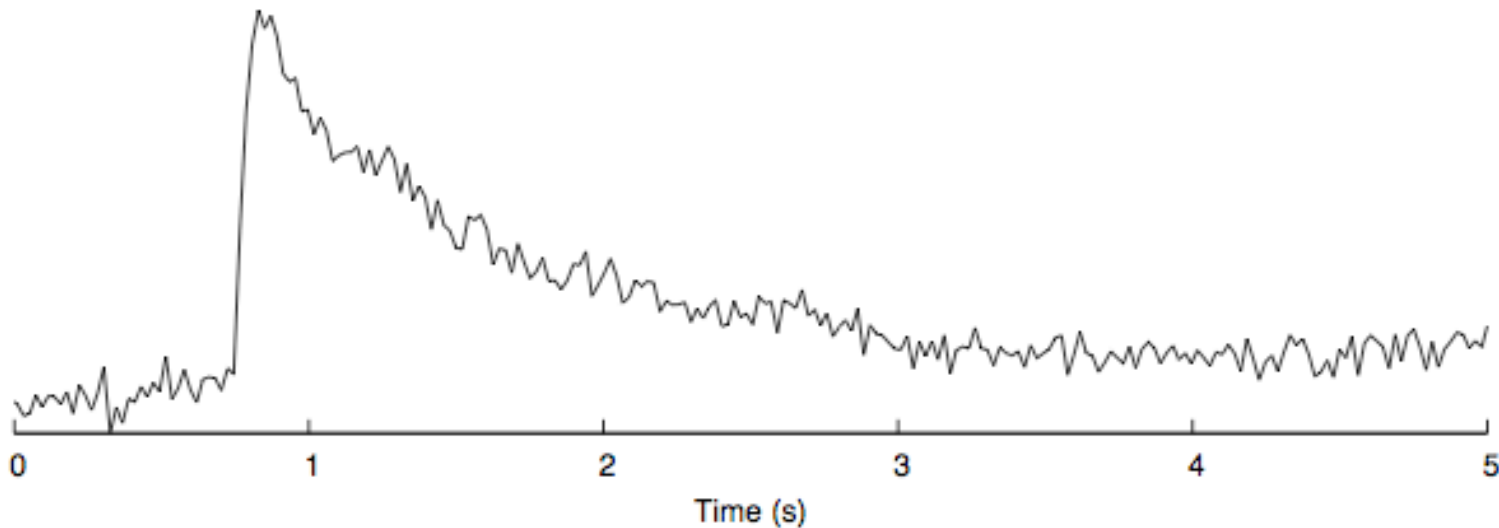
ISSUE SOLVED: Has to do with "Beam Duration" specification in MoM

Crab Giant Pulses: Note Timescales

HBA

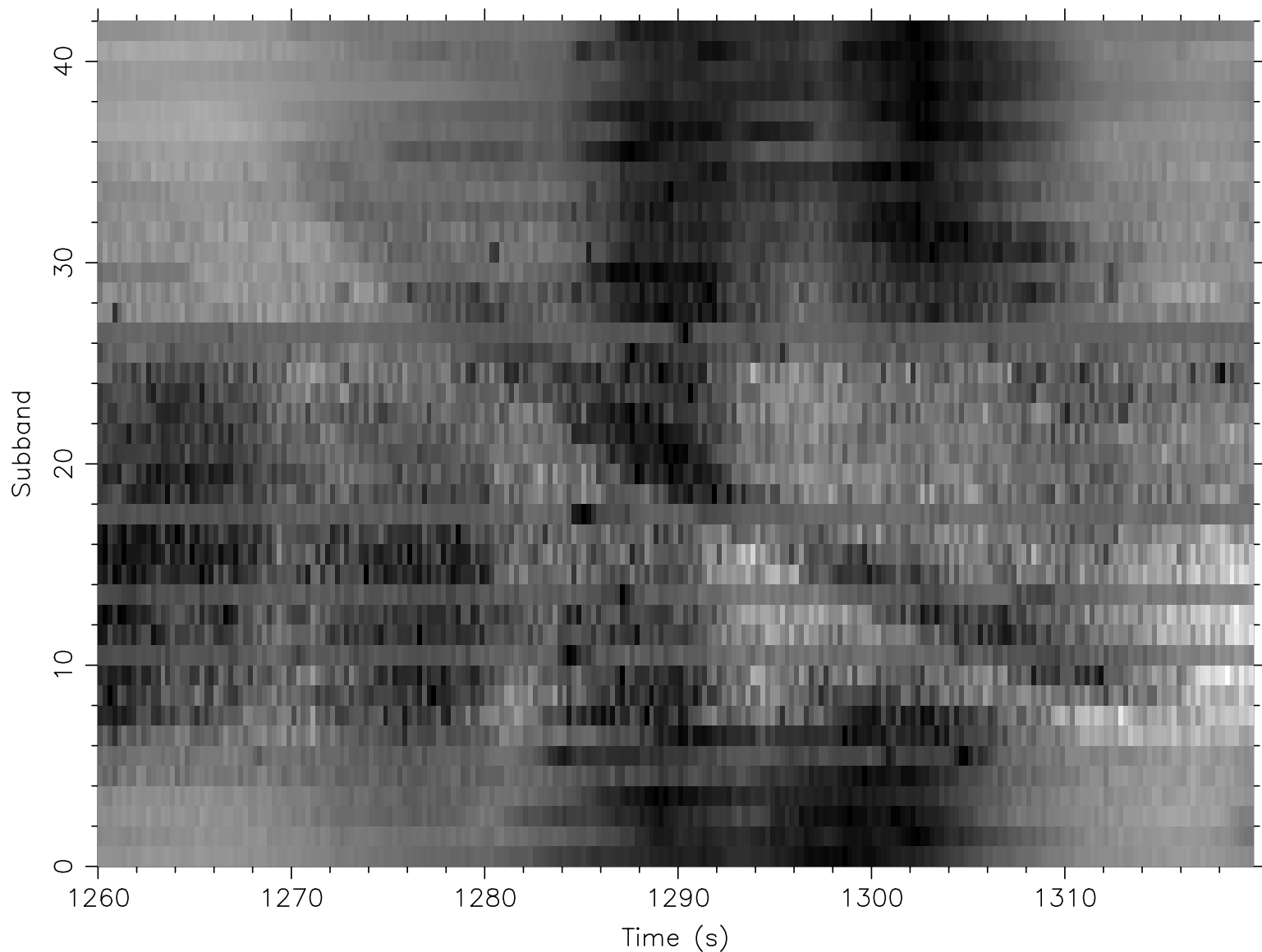


LBA



Tied-array beams will greatly reduce the nebular background

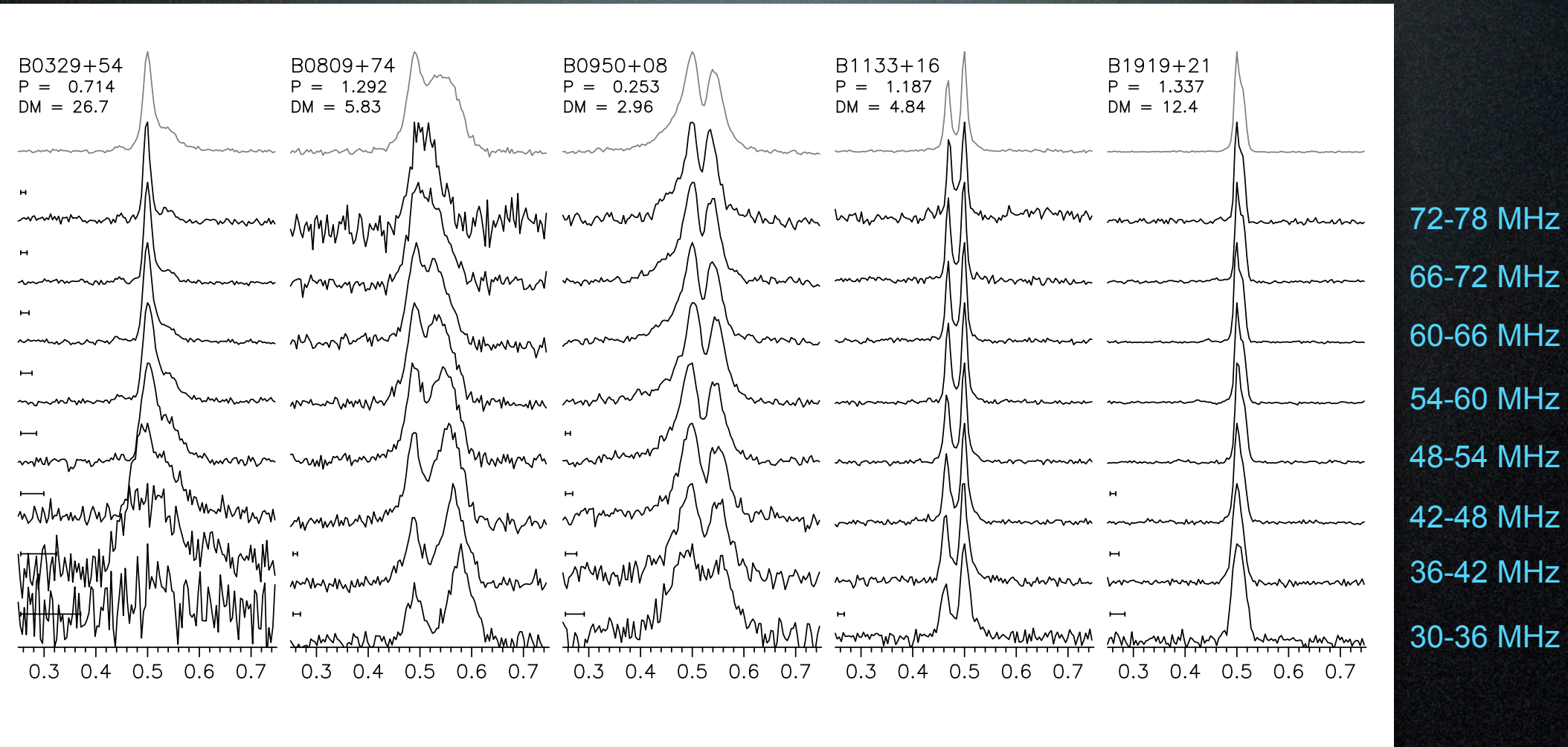
Crab LBA Giant Pulse



We are investigating the nature of other baseline variations (RFI?)

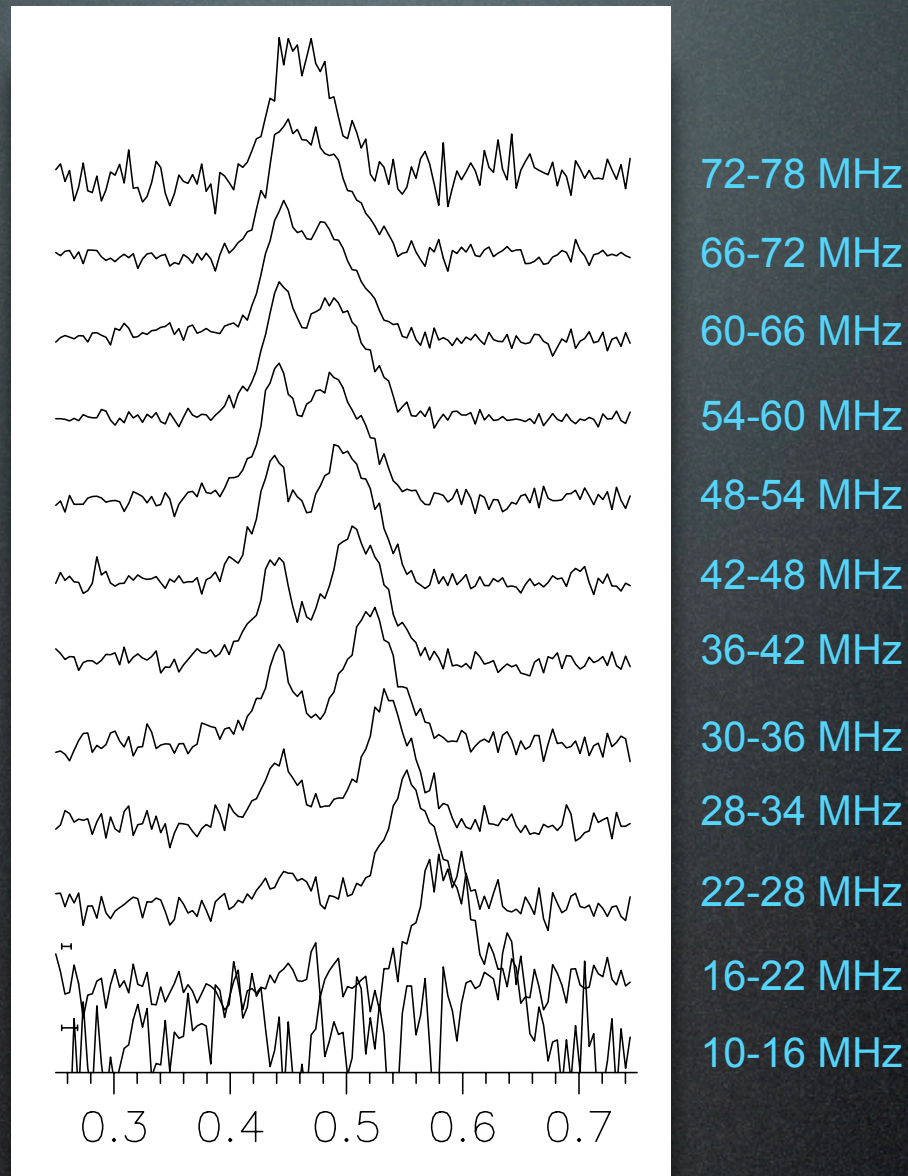
Recent LBA Pulsar Observations

(post station calibration)



Large, intrinsic (and extrinsic) profile evolution across band

First LOFAR Pulsar Detection <30MHz!!!



PSR B0809+74 detected all the way down to 16MHz!

Plans for the near future

- More < 30 MHz observations.
- Try to get a 10-16MHz detection.
- 4 LBA observations simultaneously.
- FR606 first light.
- HBA calibration tests.
- HBA1 tests.