

Pulsar/Beam-formed Busy Week #11



Jason Hessels

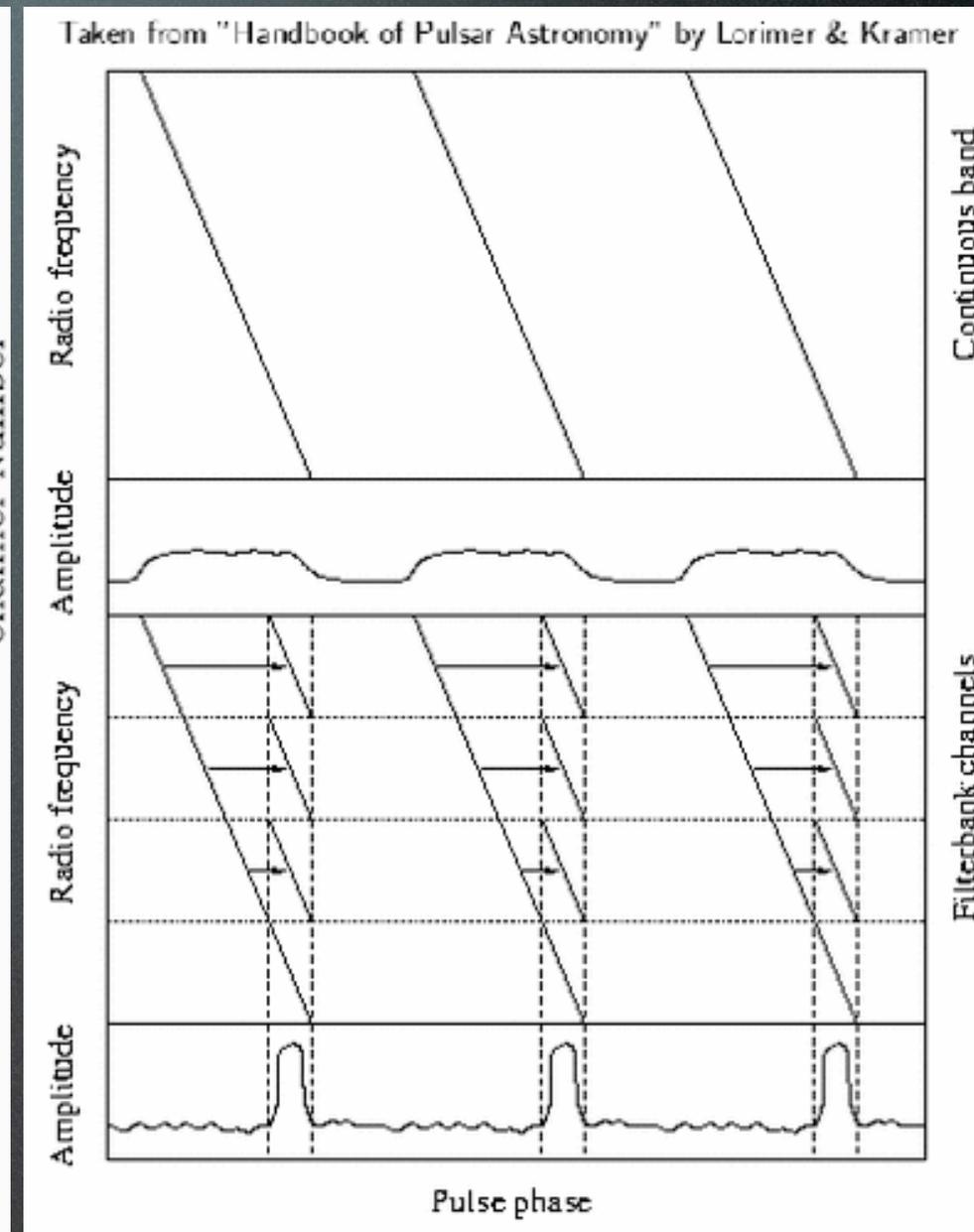
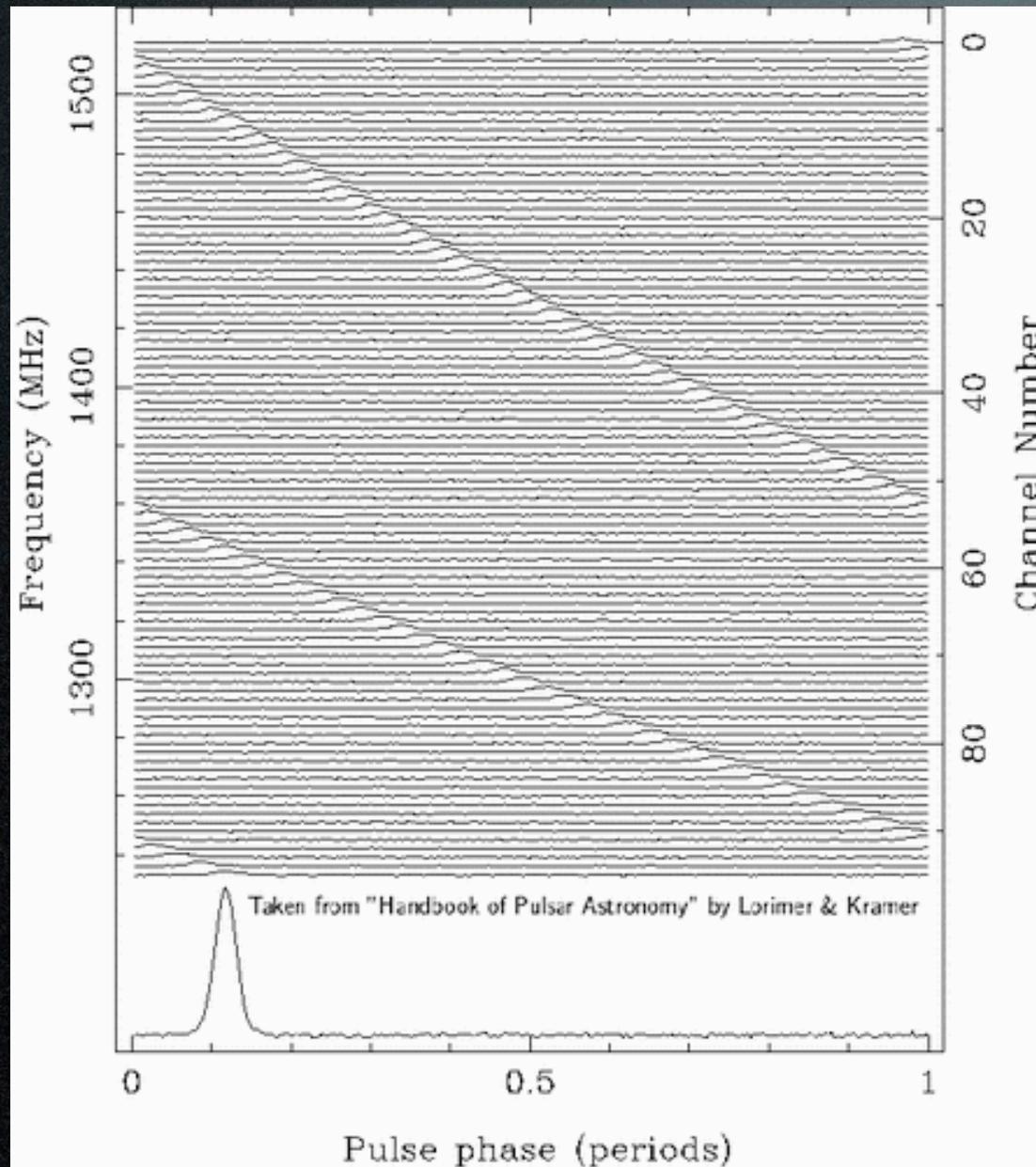
on behalf of

Ken Anderson, Aris Noutsos, Aris Karastergiou, Ben Stappers, Anastasia Alexov, Vlad Kondratiev, Tom Hassall, Thijs Coenen, Sander ter Veen, Joeri van Leeuwen, Ashish Asgekar, and Jan David Mol, Christian Vocks, Richard Fallows, Joris Verbiest, Jean-Mathias Griessmeier, Masaya Kuniyoshi, Charlotte Storey, John Romein

PBW#11: Main Goals

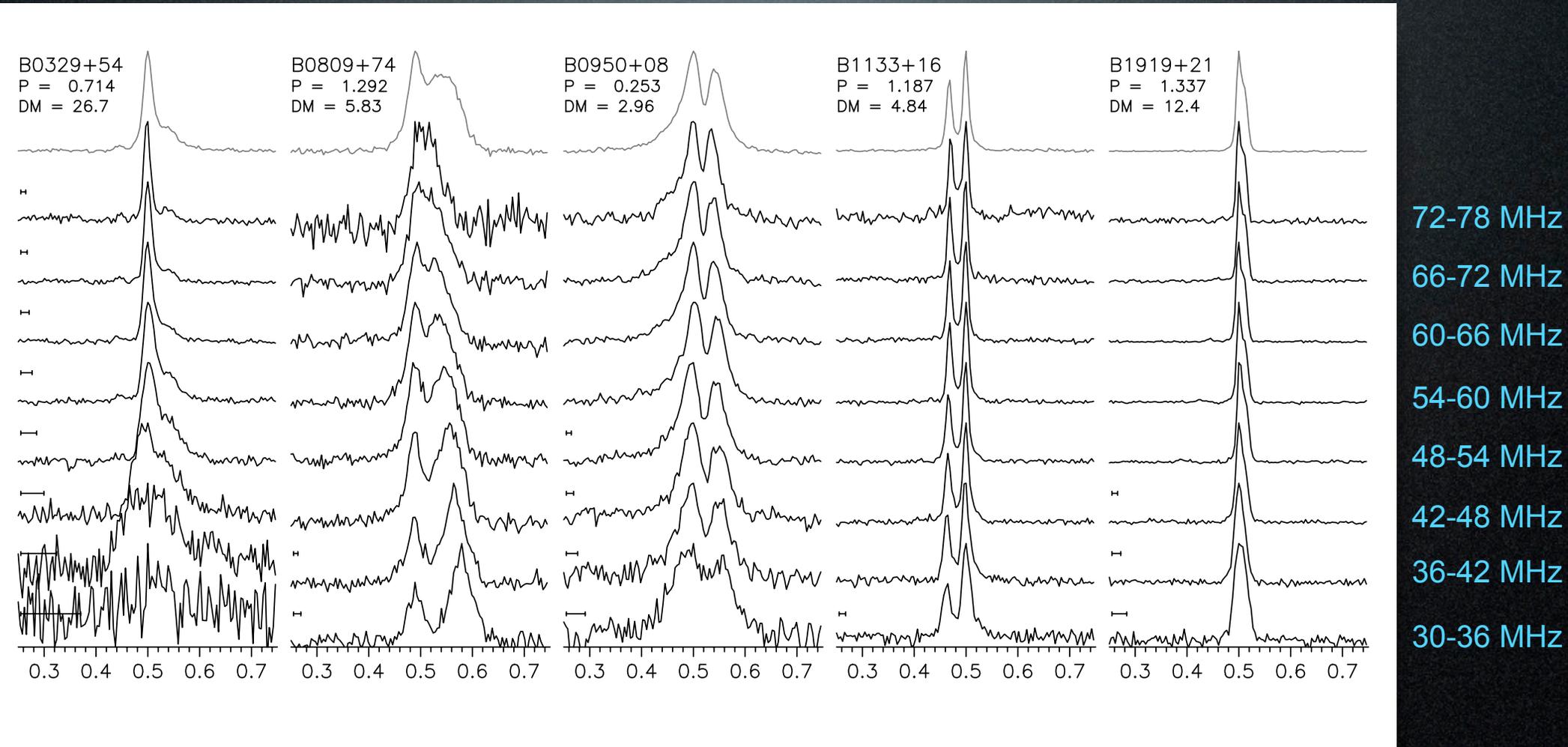
- Coherent Superterp addition
- Raw voltage observations
- Online coherent dedispersion
- LOFAR pulsar reference paper
- Data archive (SARA)
- Reduce “survey” observations
- RFI monitoring

Incoherent Dedispersion



Recent LBA Pulsar Observations

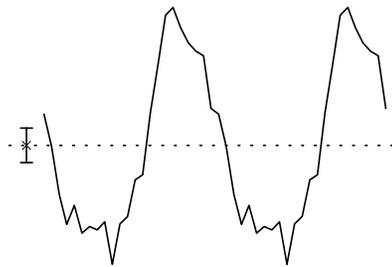
(post station calibration)



Large, intrinsic (and extrinsic) profile evolution across band

Online coherent dedispersion

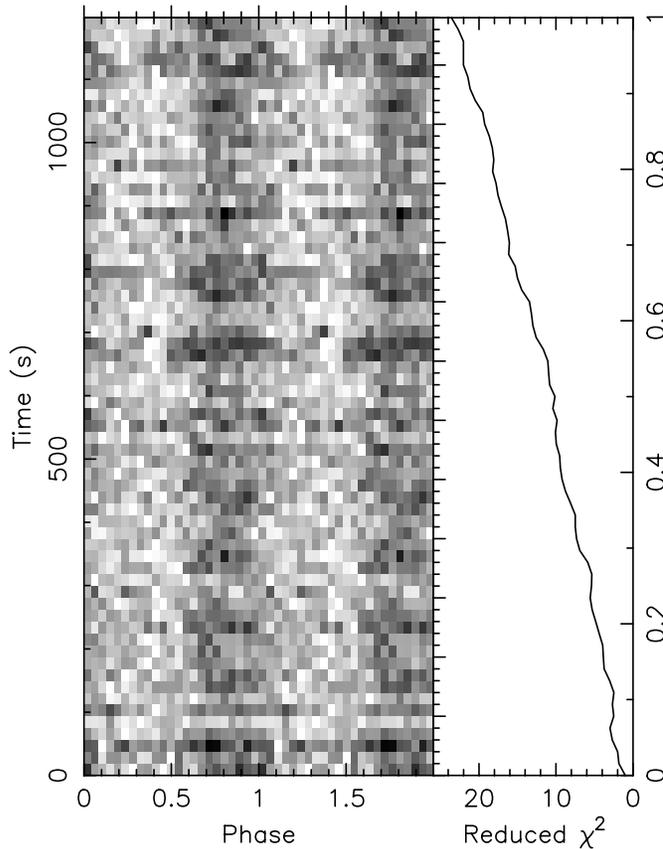
2 Pulses of Best Profile



Candidate: ACCEL_Cand_27
 Telescope: LOFAR
 Epoch_{topo} = N/A
 Epoch_{bary} = 55586.65766548517
 T_{sample} = 8.192e-05
 Data Folded = 14614528
 Data Avg = -0.1915
 Data StdDev = 1.051e+05
 Profile Bins = 23
 Profile Avg = -1.227e+05
 Profile StdDev = 8.376e+07

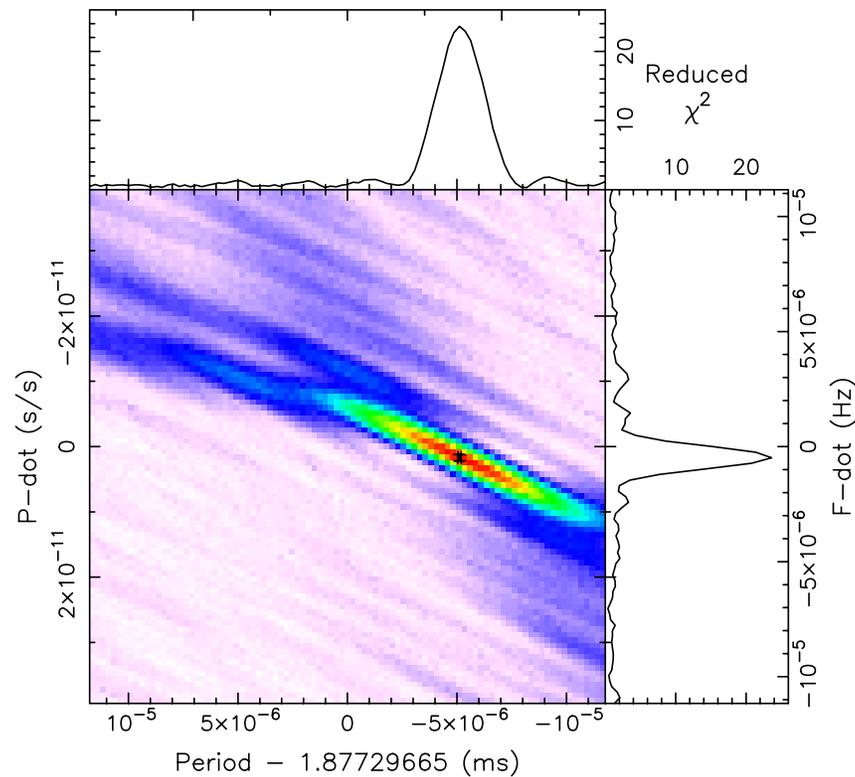
Search Information

RA_{J2000} = 00:34:21.8200 DEC_{J2000} = -05:34:36.6000
 Best Fit Parameters
 Reduced χ^2 = 23.575 P(Noise) < 9.42e-96 ($\approx 20.7\sigma$)
 Dispersion Measure (DM) = N/A
 P_{topo} (ms) = N/A P_{bary} (ms) = 1.877291527(75)
 P'_{topo} (s/s) = N/A P'_{bary} (s/s) = 1.71(48)x10⁻¹²
 P''_{topo} (s/s²) = N/A P''_{bary} (s/s²) = 0.0(2.6)x10⁻¹⁵
 Binary Parameters
 P_{orb} (s) = N/A e = N/A
 a₁sin(i)/c (s) = N/A ω (rad) = N/A
 T_{peri} = N/A



J0034-0534_L2011_1002503_RSPA_DM13.76.dat

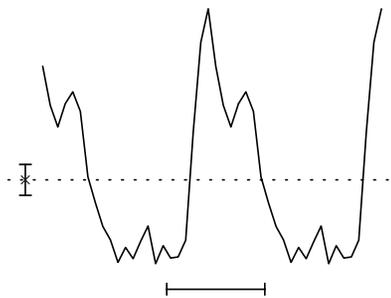
Freq - 532.680864 (Hz)
 -2×10^{-3} 0 2×10^{-3}



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Online coherent dedispersion

2 Pulses of Best Profile



Candidate: ACCEL_Cand_27
 Telescope: LOFAR
 Epoch_{topo} = N/A
 Epoch_{bary} = 55586.67502510569
 T_{sample} = 8.192e-05
 Data Folded = 14614528
 Data Avg = -0.03282
 Data StdDev = 9.797e+04
 Profile Bins = 23
 Profile Avg = -2.435e+04
 Profile StdDev = 7.809e+07

Search Information

RA_{J2000} = 00:34:21.8200 DEC_{J2000} = -05:34:36.6000

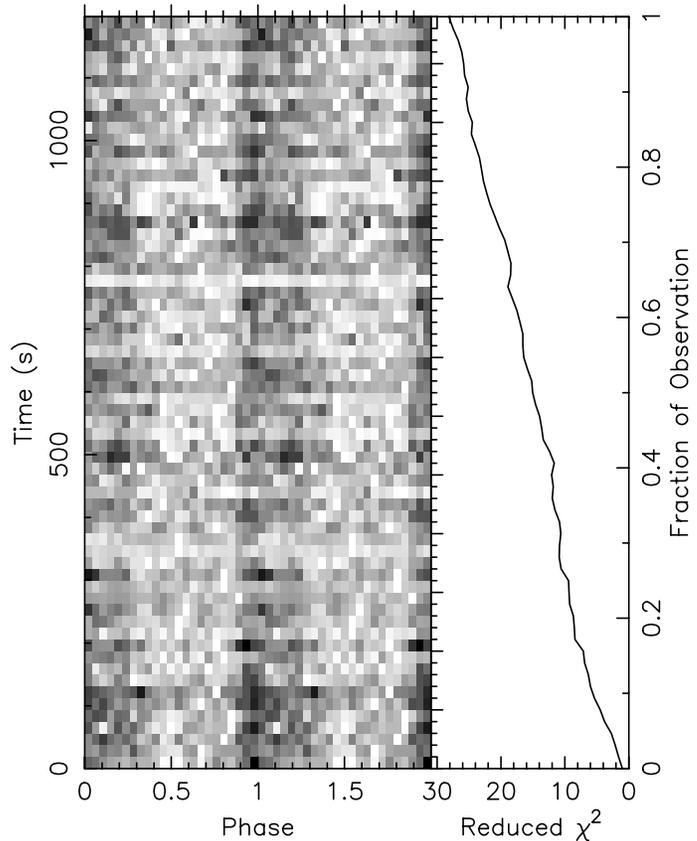
Best Fit Parameters

Reduced χ^2 = 28.145 P(Noise) < 8.07e-117 ($\approx 22.9\sigma$)
 Dispersion Measure (DM) = N/A

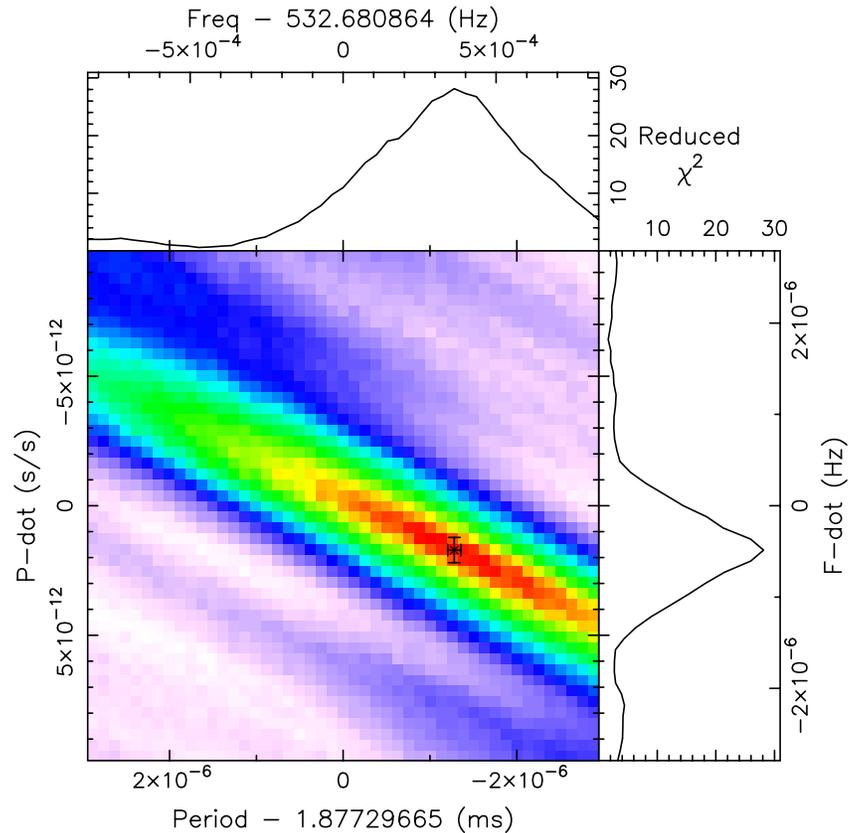
P_{topo} (ms) = N/A P_{bary} (ms) = 1.877295367(75)
 P¹_{topo} (s/s) = N/A P¹_{bary} (s/s) = 1.71(49)x10⁻¹²
 P¹¹_{topo} (s/s²) = N/A P¹¹_{bary} (s/s²) = 0.0(2.6)x10⁻¹⁵

Binary Parameters

P_{orb} (s) = N/A e = N/A
 a₁sin(i)/c (s) = N/A ω (rad) = N/A
 T_{peri} = N/A

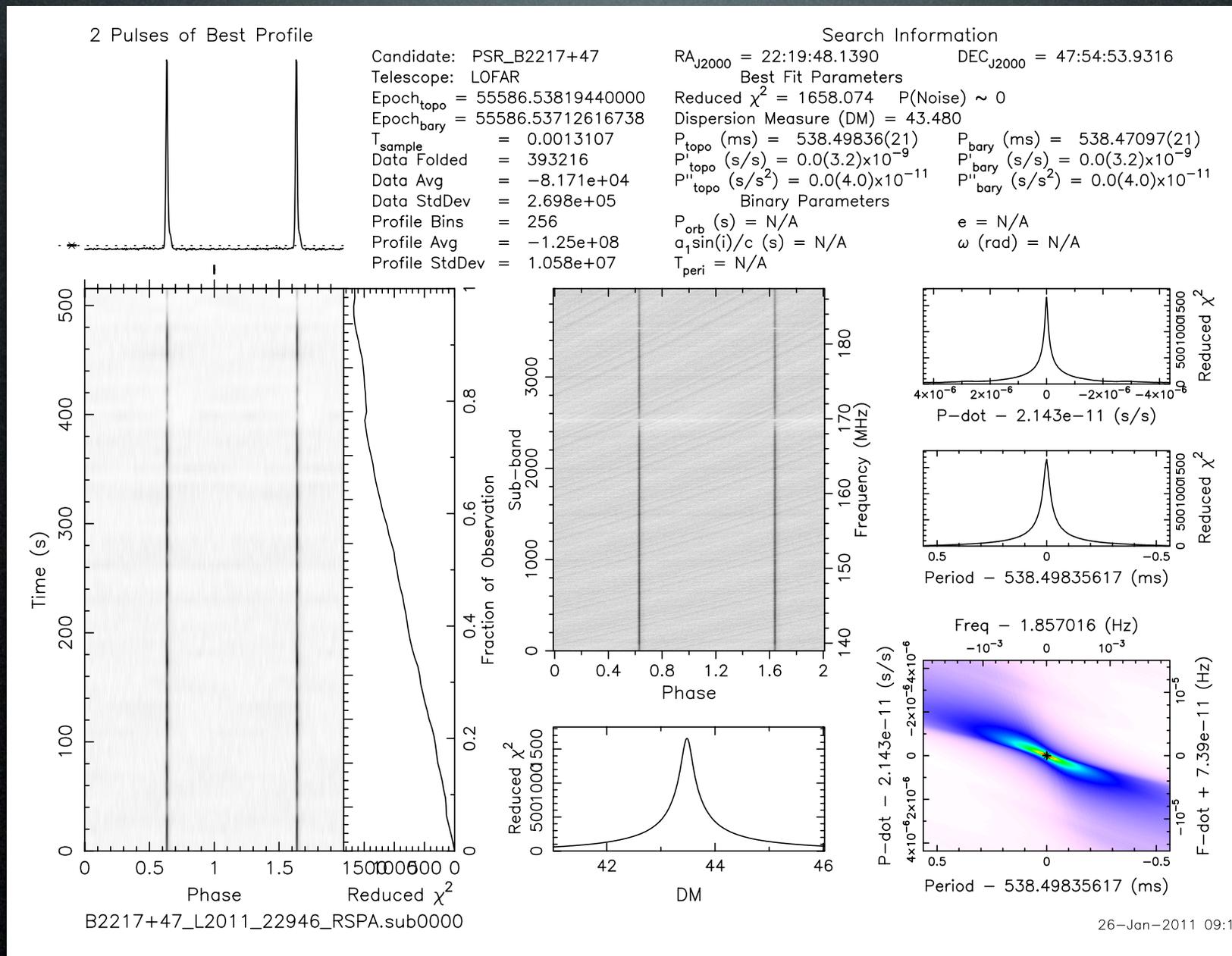


J0034-0534_L2011_1002504_RSPA_DM13.76.dat



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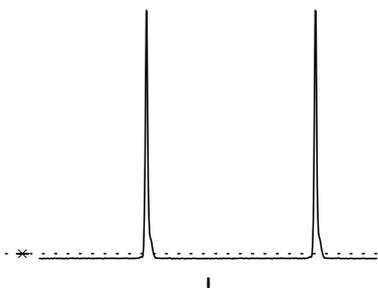
Coherent Addition of Superterp Working?!



26-Jan-2011 09:12

Coherent Addition of Superterp Working?!

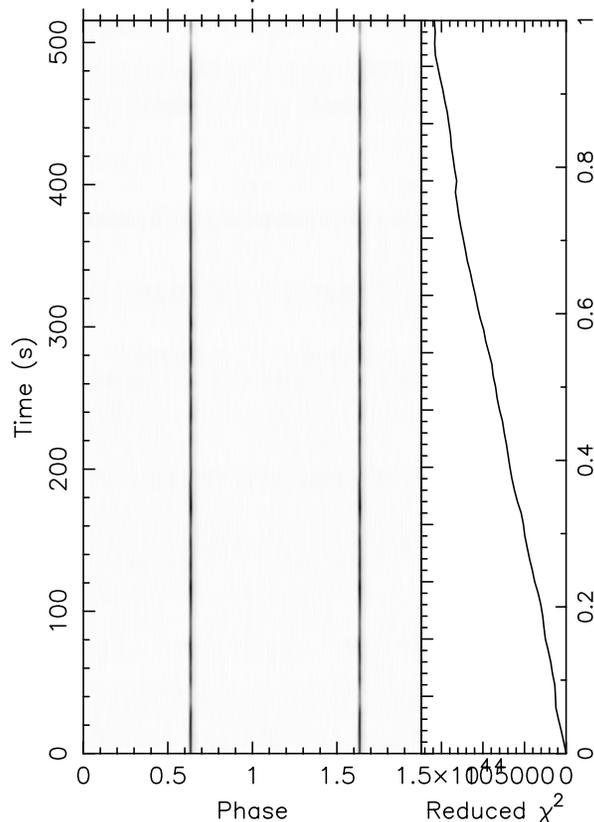
2 Pulses of Best Profile



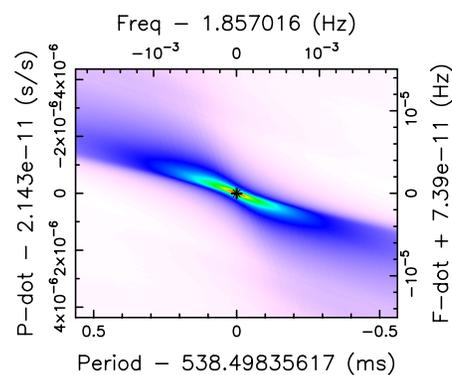
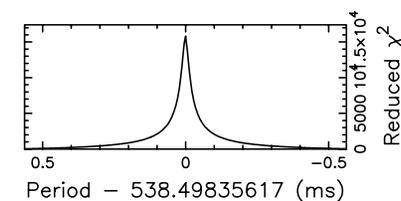
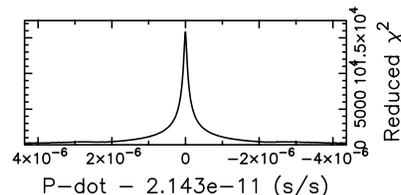
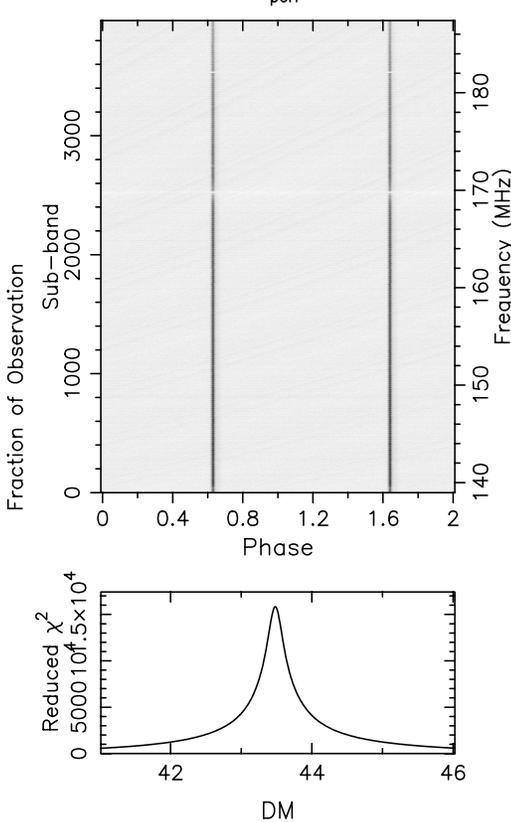
Candidate: PSR_B2217+47
 Telescope: LOFAR
 Epoch_{topo} = 55586.53819440000
 Epoch_{bary} = 55586.53712616738
 T_{sample} = 0.0013107
 Data Folded = 393216
 Data Avg = -4.007e+04
 Data StdDev = 2.791e+05
 Profile Bins = 256
 Profile Avg = -6.134e+07
 Profile StdDev = 1.094e+07

Search Information

RA_{J2000} = 22:19:48.1390 DEC_{J2000} = 47:54:53.9316
 Best Fit Parameters
 Reduced χ^2 = 15834.023 P(Noise) \sim 0
 Dispersion Measure (DM) = 43.480
 P_{topo} (ms) = 538.498356(69) P_{bary} (ms) = 538.470969(69)
 P'_{topo} (s/s) = 0.0(1.0)x10⁻⁹ P'_{bary} (s/s) = 0.0(1.0)x10⁻⁹
 P''_{topo} (s/s²) = 0.0(1.3)x10⁻¹¹ P''_{bary} (s/s²) = 0.0(1.3)x10⁻¹¹
 Binary Parameters
 P_{orb} (s) = N/A e = N/A
 a₁sin(i)/c (s) = N/A ω (rad) = N/A
 T_{peri} = N/A



B2217+47_L2011_22946_RSP0.sub0000



Plans for the near future

- Reduce raw voltage data --> polarimetry
- Determine whether “Coherent Stokes” is working
- RFI tests
- Submit reference paper by Friday