



# Observing Application

Date : Aug, 10 2010  
 Proposal ID : VLBA/10B-146  
 Legacy ID : BM348  
 PI : Walid Majid  
 Type : Rapid Response -  
 Exploratory Time  
 Category : Galactic  
 Total Time : 2.0

## Fast transient search pipeline validation with observation of bright pulsars

### Abstract:

We propose to carry out brief observations of two bright pulsars in order to develop and test our fast transient search pipeline in support of a previously submitted and approved VLBA proposal by Tingay et al. (2009) with the goal of carrying out a commensal search program for fast radio transients using all VLBA observations. A preliminary detection pipeline has now been developed by our team, which can continuously monitor filterbank data tapped off the DIFX correlator for the presence of fast (< 1s time scale) radio transients. The validation of this pipeline, as well as the development of more robust detection algorithms would greatly benefit from acquiring a short segment of VLBA data containing bright pulses of galactic origin with modest to large dispersion measures. We therefore propose to observe two such bright radio pulsars, the Crab pulsar (B0531+21) and B0329+54 each over a period of 1 hour per target for a total of 2 hours with the VLBA. With this small amount of observing time, we expect to verify and validate the transient detection pipeline with known transient-like signals and at the same time have a very useful dataset for future algorithm development work.

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### Related proposals:

BT100 (Tingay et al. 2009), BT111 (Tingay et al. 2010 - VLBA/10C-100)

### Joint:

Not a Joint Proposal

### Observing type(s):

Pulsar

**VLBA Resources**

Name	Wavelength	Processor	Stations	Observing Parameters	Correlation Parameters
psr-lband	21 cm	Socorro-DiFX	VLBA <input checked="" type="checkbox"/> Br <input checked="" type="checkbox"/> Fd <input checked="" type="checkbox"/> Hn <input checked="" type="checkbox"/> Kp <input checked="" type="checkbox"/> La <input checked="" type="checkbox"/> Mk <input checked="" type="checkbox"/> Kp <input checked="" type="checkbox"/> Ov <input checked="" type="checkbox"/> Pt <input checked="" type="checkbox"/> Sc <input checked="" type="checkbox"/> HSA Ar      Ef      GBT VLA-Y27 VLA-Y1 Geodetic	Bandwidth: 8 MHz Baseband 8 Channels Sample Rate 16 (Msample/s) Bits/Sample 2 Polarization RCP & Agg. Bit Rate 256 (Mbits/sec)	Full Polarization Pulsar Gate Correlator Passes 1 Integration Period (sec) 1.0 Spectral Points /BBC 8 No of Fields 1

**Sources:**

Name	Position		Velocity		Group
PSRb0329+54	Coordinate System	Equatorial	Convention	Radio	Bright pulsars
	Equinox	J2000			
	Right Ascension	03:32:59.36 00:00:00.0	Ref. Frame	LSRK	
	Declination	+54:34:44 00:00:00	Velocity	0.00	
PSRB0531+21	Coordinate System	Equatorial	Convention	Radio	Bright pulsars
	Equinox	J2000			
	Right Ascension	05:34:31.95 00:00:00.0	Ref. Frame	LSRK	
	Declination	+22:00:52 00:00:00	Velocity	0.00	

**Sessions:**

Name	Session Time (hours)	Repeat	Separation	GST minimum	GST maximum	Elevation Minimum
A	2.00	1	0 day	00:00:00	08:00:00	0

**Session Constraints:**

Name	Constraints	Comments
A		60 minutes per source; We can make good use of any antenna subset with at least 6 antennas; Walter Brisken of NRAO (one of our Co-Is) will help with data handling.

**Session Source/Resource Pairs:**

Session Name	Source	Resource	Time	Figure of Merit
A	PSRb0329+54 PSRB0531+21	psr-lband	2.0 hour	0.2 mJy/bm

Staff support: None

Plan of Dissertation: no