



Observing Application

Date : Dec, 04 2009
 Proposal ID : VLBA/09C-145
 Legacy ID : BD149
 PI : Fonda Day
 Type : Rapid Response -
 Exploratory Time
 Category : Stellar,
 Astrometry/Geodesy,
 Extragalactic
 Total Time : 4.0

Identifying Suitable Calibrators for VLBA Astrometry Measurements of PPNs

Abstract:

Measuring distances to pre-planetary nebulae (PPNs) is an important step in understanding the evolution of intermediate mass stars from the asymptotic giant branch (AGB) phase to the planetary nebula (PN) phase. Water fountain nebulae are a subclass of PPNs displaying high velocity (>50 km/s velocity separation) H₂O jet-like outflows. Project BP150 was allocated VLBA time to measure the parallax distance to four water fountain sources. Two of these target PPNs remain to be observed, however suitable phase-reference calibrators for each target are essential for the accuracy of our measurements. We propose to use four hours of VLBA exploratory time so that we may identify potential calibrators from a list of NVSS candidates near (<1 degree) our remaining two parallax targets.

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Related proposals:

BP150

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLBA Resources

Name	Wavelength	Processor	Stations	Observing Parameters	Correlation Parameters

Name	Wavelength	Processor	Stations	Observing Parameters	Correlation Parameters
H2O	1.3 cm	Socorro-FXCORR	VLBA <input checked="" type="checkbox"/>	Bandwidth: 16 MHz Baseband 4 Channels Sample Rate (Msample/s) 32 Bits/Sample 2 Polarization RCP & Agg. Bit Rate (Mbits/sec) 256	Full Polarization Pulsar Gate Correlator Passes 1 Integration Period (sec) 2.0 Spectral Points /BBC 8
			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		
OH	18 cm	Socorro-FXCORR	VLBA <input checked="" type="checkbox"/>	Bandwidth: 16 MHz Baseband 4 Channels Sample Rate (Msample/s) 32 Bits/Sample 2 Polarization RCP & Agg. Bit Rate (Mbits/sec) 256	Full Polarization Pulsar Gate Correlator Passes 1 Integration Period (sec) 2.0 Spectral Points /BBC 8
			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		

Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
J1648-3301	16 48 42.34 00:00:00	-33 01 47.7 00:00:00	J2000	Velocity : 0	i16552
N1654-3049	16 54 10.67 00:00:00	-30 49 10.9 00:00:00	J2000	Velocity : 0	i16552
N1654-3046	16 54 16.06 00:00:00	-30 46 21.7 00:00:00	J2000	Velocity : 0	i16552
N1655-3044	16 55 34.14 00:00:00	-30 44 26.7 00:00:00	J2000	Velocity : 0	i16552
N1655-3032	16 55 54.69 00:00:00	-30 32 40.2 00:00:00	J2000	Velocity : 0	i16552
N1656-3003	16 56 19.49 00:00:00	-30 03 12.9 00:00:00	J2000	Velocity : 0	i16552
N1656-3032	16 56 36.21 00:00:00	-30 32 7.8 00:00:00	J2000	Velocity : 0	i16552
N1656-3020	16 56 47.90 00:00:00	-30 20 16.9 00:00:00	J2000	Velocity : 0	i16552
N1657-3146	16 57 11.85 00:00:00	-31 46 29.1 00:00:00	J2000	Velocity : 0	i16552
N1657-3031	16 57 18.25 00:00:00	-30 31 41.5 00:00:00	J2000	Velocity : 0	i16552
N1657-3126	16 57 34.65 00:00:00	-31 26 5.2 00:00:00	J2000	Velocity : 0	i16552
N1657-3105	16 57 59.61 00:00:00	-31 05 41.2 00:00:00	J2000	Velocity : 0	i16552
N1658-3118	16 58 41.24 00:00:00	-31 18 5.4 00:00:00	J2000	Velocity : 0	i16552
N1658-3139	16 58 58.11 00:00:00	-31 39 18.9 00:00:00	J2000	Velocity : 0	i16552
N1659-3105	16 59 35.32 00:00:00	-31 05 27.3 00:00:00	J2000	Velocity : 0	i16552

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
N1659-3130	16 59 49.04 00:00:00	-31 30 47.4 00:00:00	J2000	Velocity : 0	i16552
N1659-3132	16 59 49.80 00:00:00	-31 32 26.5 00:00:00	J2000	Velocity : 0	i16552
N1659-3052	16 59 56.99 00:00:00	-30 52 5.6 00:00:00	J2000	Velocity : 0	i16552
N1700-3108	17 00 27.02 00:00:00	-31 08 13.6 00:00:00	J2000	Velocity : 0	i16552
N1700-3035	17 00 27.07 00:00:00	-30 35 12.3 00:00:00	J2000	Velocity : 0	i16552
N1700-3036	17 00 27.52 00:00:00	-30 36 8.8 00:00:00	J2000	Velocity : 0	i16552
N1700-3017	17 00 41.38 00:00:00	-30 17 9.7 00:00:00	J2000	Velocity : 0	i16552
N1700-3043	17 00 43.11 00:00:00	-30 43 12.1 00:00:00	J2000	Velocity : 0	i16552
N1700-3048	17 00 54.13 00:00:00	-30 48 7.4 00:00:00	J2000	Velocity : 0	i16552
N1701-3046	17 01 1.06 00:00:00	-30 46 8.6 00:00:00	J2000	Velocity : 0	i16552
N1701-3101	17 01 4.48 00:00:00	-31 01 45.5 00:00:00	J2000	Velocity : 0	i16552
N1701-3013	17 01 12.80 00:00:00	-30 13 5.9 00:00:00	J2000	Velocity : 0	i16552
N1702-3118	17 02 9.55 00:00:00	-31 18 6.3 00:00:00	J2000	Velocity : 0	i16552
J1855+0251	18 55 35.44 00:00:00	+02 51 19.6 00:00:00	J2000	Velocity : 0	i18596
J1858+0313	18 58 02.33 00:00:00	+03 13 16.4 00:00:00	J2000	Velocity : 0	i18596
N1858+0301	18 58 49.41 00:00:00	+03 01 44.6 00:00:00	J2000	Velocity : 0	i18596
N1859+0338	18 59 6.41 00:00:00	+03 38 42.4 00:00:00	J2000	Velocity : 0	i18596
N1859+0348	18 59 38.23 00:00:00	+03 48 45.5 00:00:00	J2000	Velocity : 0	i18596
N1859+0251	18 59 41.13 00:00:00	+02 51 43.3 00:00:00	J2000	Velocity : 0	i18596
N1900+0403	19 00 16.20 00:00:00	+04 03 7.8 00:00:00	J2000	Velocity : 0	i18596
N1900+0303	19 00 33.68 00:00:00	+03 03 46.6 00:00:00	J2000	Velocity : 0	i18596
J1900+0412	19 00 30.36 00:00:00	+04 12 01.4 00:00:00	J2000	Velocity : 0	i18596
N1900+0414	19 00 38.18 00:00:00	+04 14 19.0 00:00:00	J2000	Velocity : 0	i18596
N1900+0335	19 00 45.89 00:00:00	+03 35 53.0 00:00:00	J2000	Velocity : 0	i18596
N1901+0244	19 01 26.14 00:00:00	+02 44 47.2 00:00:00	J2000	Velocity : 0	i18596
N1901+0410	19 01 42.85 00:00:00	+04 10 21.0 00:00:00	J2000	Velocity : 0	i18596
N1901+0328	19 01 44.43 00:00:00	+03 28 54.9 00:00:00	J2000	Velocity : 0	i18596

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
N1901+0414	19 01 47.02 00:00:00	+04 14 44.3 00:00:00	J2000	Velocity : 0	i18596
N1901+0412	19 01 53.44 00:00:00	+04 12 50.7 00:00:00	J2000	Velocity : 0	i18596
N1902+0335	19 02 1.19 00:00:00	+03 35 35.4 00:00:00	J2000	Velocity : 0	i18596
N1902+0406	19 02 36.19 00:00:00	+04 06 58.8 00:00:00	J2000	Velocity : 0	i18596
N1902+0246	19 02 52.94 00:00:00	+02 46 50.1 00:00:00	J2000	Velocity : 0	i18596
N1902+0330	19 02 57.64 00:00:00	+03 30 42.1 00:00:00	J2000	Velocity : 0	i18596
N1903+0321	19 03 11.95 00:00:00	+03 21 3.8 00:00:00	J2000	Velocity : 0	i18596
J1903+0145	19 03 53.06 00:00:00	+01 45 26.3 00:00:00	J2000	Velocity : 0	i18596
N1904+0354	19 04 47.65 00:00:00	+03 54 56.3 00:00:00	J2000	Velocity : 0	i18596
N1905+0309	19 05 11.09 00:00:00	+03 09 4.4 00:00:00	J2000	Velocity : 0	i18596
N1905+0342	19 05 28.41 00:00:00	+03 42 45.1 00:00:00	J2000	Velocity : 0	i18596
N1905+0306	19 05 43.27 00:00:00	+03 06 11.8 00:00:00	J2000	Velocity : 0	i18596
J1907+0127	19 07 12.00 00:00:00	+01 27 09.0 00:00:00	J2000	Velocity : 0	i18596

Sessions:

Name	Session Time (hours)	Repeat	Separation	GST minimum	GST maximum	Elevation Minimum
oh1	2.00	1	0 day	21:00:00	00:03:00	0
h2o2	2.00	1	0 day	21:00:00	00:03:00	0

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
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Session Name	Source	Resource	Time	Figure of Merit
oh1	J1855+0251 J1858+0313 N1858+0301 N1859+0338 N1859+0348 N1859+0251 N1900+0403 N1900+0303 J1900+0412 N1900+0414 N1900+0335 N1901+0244 N1901+0410 N1901+0328 N1901+0414 N1901+0412 N1902+0335 N1902+0406 N1902+0246 N1902+0330 N1903+0321 J1903+0145 N1904+0354 N1905+0309 N1905+0342 N1905+0306 J1907+0127	OH	1.0 hour	0.521 mJy/bm
oh1	J1648-3301 N1654-3049 N1654-3046 N1655-3044 N1655-3032 N1656-3003 N1656-3032 N1656-3020 N1657-3146 N1657-3031 N1657-3126 N1657-3105 N1658-3118 N1658-3139 N1659-3105 N1659-3130 N1659-3132 N1659-3052 N1700-3108 N1700-3035 N1700-3036 N1700-3017 N1700-3043 N1700-3048 N1701-3046 N1701-3101 N1701-3013 N1702-3118	OH	1.0 hour	0.521 mJy/bm

Session Name	Source	Resource	Time	Figure of Merit
h2o2	J1855+0251 J1858+0313 N1858+0301 N1859+0338 N1859+0348 N1859+0251 N1900+0403 N1900+0303 J1900+0412 N1900+0414 N1900+0335 N1901+0244 N1901+0410 N1901+0328 N1901+0414 N1901+0412 N1902+0335 N1902+0406 N1902+0246 N1902+0330 N1903+0321 J1903+0145 N1904+0354 N1905+0309 N1905+0342 N1905+0306 J1907+0127	H2O	1.0 hour	0.860 mJy/bm
h2o2	J1648-3301 N1654-3049 N1654-3046 N1655-3044 N1655-3032 N1656-3003 N1656-3032 N1656-3020 N1657-3146 N1657-3031 N1657-3126 N1657-3105 N1658-3118 N1658-3139 N1659-3105 N1659-3130 N1659-3132 N1659-3052 N1700-3108 N1700-3035 N1700-3036 N1700-3017 N1700-3043 N1700-3048 N1701-3046 N1701-3101 N1701-3013 N1702-3118	H2O	1.0 hour	0.860 mJy/bm

Staff support: Friend

Plan of Dissertation: yes

