VSOP PROPOSAL COVER SHEETS

ID :

TR :

SR :

DEADLINE : 17 November, 1995
SEND TO : VSOP SOG, ISAS, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229, JAPAN

Please read Appendix C of Announcement of Opportunity for details on how to fill in this Cover Sheet.

(1) Date prepared : 27-October-1995

(2) Proposal title : Interstellar Scattering trough Observations of Pulsars

(3)	INVESTIGATORS	INSTITUTION
P.I.	M.V. Popov	ASC, Russia
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

We propose to observe five brightest pulsars in conjunction with 3-5 ground radio telescopes at 1.67 GHz. The following scientific objectives will be probed: 1) direct measurements of scattering diameters will yield information on the electron density turbulence in the interstellar medium; 2) direct measurements of multiple images during strong refraction event will permit us to estimate the distance of the lensing regions and probe superresolution technique; 3) data-processing under the short-exposure conditions $\Delta B < \Delta\nu_{sc}$ and $\tau < t_{sc}$ will enable us to test scattering reduction technique in SVLBI experiment; 4) pulsars with low scattering can be used as good calibrators for space-ground interferometer.

(6) Proposal Category (indicate all that apply):

Object type:

☐ AGN, ☐ Masers, ☐ Stellar, ☑ Other : Pulsars

Experiment type:

☑ Single-observation, ☐ Monitoring, ☐ Polarization,
☑ Time-critical, ☐ Target of Opportunity, ☐ Other :

(7) VSOP spacecraft observing mode (see Section 3 and Table 5 of the VSOP Proposer's Guide):

☑ 2 channel x 16 MHz, 2-bit (Standard mode),
☐ 2 channel x 32 MHz, 1-bit,
☐ 1 channel x 32 MHz, 2-bit

Phase calibration tones:

☑ On (Standard continuum mode),
☐ Off (Standard spectral line mode)

(Include justification of any non-standard choice at (14) below)

(8) Ground radio telescope setup

Polarization :

☑ VSOP Standard (IEEE LCP), ☐ Non-standard :

Recording mode :

☑ As for VSOP spacecraft (Standard), ☐ Other :

(9) Investigator participation in scheduling

☑ PI (or co-I) wishes to participate in scheduling ground radio telescopes
☐ PI (or co-I) wishes to participate in scheduling the space radio telescope

(10) Preferred correlator (see Sections 9.11 and 12 of VSOP Proposer's Guide):

☑ No preference, ☐ Mitaka, ☐ Socorro, ☐ Other :

(11) Preferred post-correlation data analysis location:

☑ Home Institution, ☐ Mitaka, ☐ NRAO AOC, ☐ JIVE, ☐ Other

(12) Post-correlation data analysis assistance required:

☐ None, ☑ Consultation, ☐ Extensive help

(13) Details of proposed experiments

An 'experiment' is one or more observations of one source in one wavelength band.
A request to observe the same source in all 3 wavelength bands requires 3 columns to be filled in.
To observe the same source at the same frequency multiple times – a 'monitoring experiment' – requires only one column to be filled in.
Number of experiments in this proposal: 5

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	B0329+54	B0833-45	B1929+10	B1641-45
RA (hh mm ss.s)	03 29 11.0	08 33 29.3	19 29 52.0	16 41 10.3
Dec (dd mm ss)	54 24 36	-45 00 10	10 53 04	-45 53 38
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	1.6	1.6	1.6	1.6
Continuum observations:				
Standard VSOP freq. channels?	☑	☑	☑	☑
Channel A range (MHz)				
Channel B range (MHz)				
Spectral line observations:				
Ch.A spectral line rest freq. (MHz)				
Ch.A LSR velocity (km/s)				
Ch.B spectral line rest freq. (MHz)				
Ch.B LSR velocity (km/s)				
Min. spectral channels per IF channel				
Correlator averaging time (sec)				
FWHM of field of view required (mas)				
No. of correlating passes (if >1)				
Measured total flux density (Jy)	0.2	1.1	0.05	0.3
Measured correlated flux density on > 5000 km baseline (Jy)	0.2	1.0	0.05	0.2
Image RMS needed (mJy/beam)				
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	2	2	2	2
Number of large telescopes	5	3	5	3
Suggested array given at Item (14)	☐	☐	☐	☐
Minimum acceptable:				
Number of medium telescopes	0	1	0	1
Number of large telescopes	2	1	2	1
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	1	1	1	1
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)				
'No holes' (u,v) coverage?	☐	☐	☐	☐
Or maximum resolution (u,v) coverage?	☑	☑	☑	☑
Preferred range of dates for scheduling (for monitoring experiments give range for 1st observation only)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 5	Experiment 6	Experiment 7	Experiment 8
Source name	B0950+08			
RA (hh mm ss.s)	09 50 30.5			
Dec (dd mm ss)	08 09 45			
J2000 or B1950?	B1950			
Observing frequency band (GHz)	1.6			
Continuum observations:				
Standard VSOP freq. channels?	☑	☐	☐	☐
Channel A range (MHz)				
Channel B range (MHz)				
Spectral line observations:				
Ch.A spectral line rest freq. (MHz)				
Ch.A LSR velocity (km/s)				
Ch.B spectral line rest freq. (MHz)				
Ch.B LSR velocity (km/s)				
Min. spectral channels per IF channel				
Correlator averaging time (sec)				
FWHM of field of view required (mas)				
No. of correlating passes (if >1)				
Measured total flux density (Jy)	0.08			
Measured correlated flux density on $>$ 5000 km baseline (Jy)	0.08			
Image RMS needed (mJy/beam)				
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	2			
Number of large telescopes	5			
Suggested array given at Item (14)	☐	☐	☐	☐
Minimum acceptable:				
Number of medium telescopes	0			
Number of large telescopes	2			
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	2			
Minimum acceptable length (orbits)	1			
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)				
'No holes' (u,v) coverage?	☐	☐	☐	☐
Or maximum resolution (u,v) coverage?	☑	☐	☐	☐
Preferred range of dates for scheduling (for monitoring experiments give range for 1st observation only)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

(14) Additional notes to the scheduler :

64-m radio telescope in Kalyazin (Russia) will be included in observations of experiments 1,3,5.
Arecibo radio telescope is requested for exp. 3,5.
Correlator operation in pulsar-gating mode is desirable.
Correlated flux densities are expected to be equal to total flux densities except PSR0833-45 and PSR1641-45 for which scattering disc could be resolved.

(15) Attach a scientific and technical justification, not in excess of 2 pages of text and 2 pages of figures. Up to one page of (u,v) plots per source may optionally be included.
(Refer to the VSOP Announcement of Opportunity for detailed instructions.)
Preprints and reprints will not be forwarded to the Scientific Review Committee.

Send two paper copies of the complete proposal to:
VSOP Observing Proposals
VSOP Science Operations Group
Institute of Space and Astronautical Science
3-1-1 Yoshinodai, Sagamihara
Kanagawa 229 JAPAN
In addition, e-mail the completed LaTeX file to submit@vsopgw.isaslan1.isas.ac.jp

Cover Sheets of accepted proposals will be made available to the astronomical community.

Proposals must be received at ISAS by 17 November 1995