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 : November 16, 1995

(2) Proposal title : Deep Interferometric VSOP-Arecibo Survey

(3)	INVESTIGATORS	INSTITUTION
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co-I.	T. Ghosh, C. Salter, D. Altschuler	NAIC, Arecibo Observatory (Puerto Rico)
co-I.	H. Kobayashi, K. Fujisawa, P. Edwards	ISAS (Japan)
co-I.	A. Patnaik	MPIfR (Germany)
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

We propose observations of a faint population of flat-spectrum sources in the declination range accessible to the Arecibo telescope, providing the highest possible space VLBI sensitivity at 5 GHz. We select flat-spectrum ($\alpha \geq -0.5$ between 1.4 and 5 GHz) sources which have 5-GHz flux densities greater than 50 mJy. This flux-density limit is a factor of 20 beneath the lower limit for sources in the VSOP (continuum) Survey Program. About 160 candidate sources are included, and we desire to observe a randomly selected sample of at least 75 objects. Statistical results on the source structures (*e.g.,* brightness temperatures, sizes, fraction of the source flux densities in components detectable on space-ground baselines) will be compared to the results of the VSOP Survey Program to determine whether there are systematic differences in the compact structures of sources over a range of nearly two orders of magnitude in flux density.

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

Object type:

☑ AGN, ☐ Masers, ☐ Stellar, ☐ Other :

Experiment type:

☑ Single-observation, ☐ Monitoring, ☐ Polarization,

☐ Time-critical, ☐ Target of Opportunity, ☑ Other : Survey

(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: 75–160

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	0745+302	Many		
RA (hh mm ss.s)	07 45 01.3	00 00 00.0		
Dec (dd mm ss)	+30 14 06	+30 00 00		
J2000 or B1950?	B1950	B1950		
Observing frequency band (GHz)	5	5		
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)	0.16	> 0.05		
Measured correlated flux density on > 5000 km baseline (Jy)	0.06	> 0.02		
Image RMS needed (mJy/beam)				
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	1	1		
Number of large telescopes	1	1		
Suggested array given at Item (14)	☑	☑	☐	☐
Minimum acceptable:				
Number of medium telescopes	1	1		
Number of large telescopes	1	1		
Suggested array given at Item (14)	☑	☑	☐	☐
Length of observation:				
Preferred length (orbits)	1	1		
Minimum acceptable length (orbits)	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)				

(14) Additional notes to the scheduler :

(1) Preferred array includes AR and a co-observing medium telescope such as a single antenna from VL or WB. AR is absolutely required to perform the proposed experiment.
(2) The entire candidate source list is not included. Instead, one representative source is included as the first experiment, and the selection criteria are represented as well as possible for the second experiment. The selection criteria are: $S_\nu(4.8) > 50$ mJy; $\alpha(1.4, 4.8) \geq -0.5$; $|b| > 10^\circ$. A full list will be supplied to the VSOG in the near future (or upon request) so as not to interfere with the scheduling process.
(3) Sources have not been observed with VLBI. The estimated correlated flux density is determined by taking 40% of the total flux density, a reasonable estimate for flat-spectrum sources.
(4) An integral number of orbits (1) is entered as instructed, but only 0.5 orbits/source are actually required. A few (10–20) sources should be observed on 2–3 consecutive days.

(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