VSOP AO2 PROPOSAL COVER SHEETS

DEADLINE : 8 May, 1998
SEND TO : VSOG, ISAS, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229-8510, JAPAN

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

(1) Date prepared : 30 April 1998

(2) Proposal title : DISTINGUISHING BETWEEN MODELS OF RADIO CORE GEOMETRY

(3)	INVESTIGATORS	INSTITUTION
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(5) Proposal Abstract :

We propose to observe the compact, morphologically simple source AO 0235+164 with VSOP and several large ground telescopes, particularly Arecibo. The VSOP-Arecibo baseline, by far the most sensitive available, will cover all projected spacings from less than an Earth diameter out to about 26,000 km, nearly the maximum possible. The resulting high signal to noise ratio on baselines longer than an Earth diameter will allow us to distinguish between Gaussian, optically thin sphere, and optically thick sphere (uniform disk) models of the core geometry. Gaussian models are frequently used when determining core brightness temperatures, for example, but these may not be the most appropriate models. The difference in brightness temperature derived using different models can be large – nearly a factor of 3 between Gaussians and uniform disks. AO 0235+164 should be well described by a single component model.

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

Object type:
☑ AGN, ☐ Maser, ☐ Stellar, ☐ Pulsar, ☐ Other :

Observation type:
☑ Continuum, ☐ Spectral Line, ☐ Polarization, ☑ Time-critical, ☐ Other :

(7) Number of proposed experiments

An 'experiment' is one or more observations of one source at a fixed HALCA set-up. A request to observe the same source at 1.6 GHz and separately at 5 GHz requires two columns to be filled in in item (8) below. A request to observe the same source with HALCA simultaneously observing at 1.6 GHz and 5 GHz requires one column to be filled in. Multi-epoch observations of the same source at the same frequency – a 'monitoring experiment' – requires only one column to be filled in. Suggested observing dates, especially for for time-critical and monitoring experiments, should be specified in item (10).

The number of experiments in this proposal is: 1

(8) Details of proposed experiments

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name (J*hhmm*±*ddmm*)	J0238+1636			
Alternative name	AO 0235+164			
RA(J2000) (hh mm ss.ssss)	02 38 38.931			
Dec(J2000) (dd mm ss.ssss)	16 36 59.28			
Observing frequency band (GHz)	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)				
FWHM of field of view required (mas)				
Min. spectral channels per IF channel	128			
Correlator averaging time (sec)				
No. of correlating passes (if >1)				
Total flux density (Jy)	2.85			
Correlated flux (mJy)	670			
Ground Radio Telescopes:				
Suggested array given at Item (10)?	☑	☐	☐	☐
GRT observing mode:				
128Mbps LCP (standard)	☑	☐	☐	☐
128Mbps LCP/RCP	☐	☐	☐	☐
256Mbps LCP/RCP	☐	☐	☐	☐
Preferred correlator:				
No preference	☐	☐	☐	☐
Mitaka	☐	☐	☐	☐
Penticton	☐	☐	☐	☐
Socorro	☑	☐	☐	☐
Monitoring programs:				
Number of observations				
Mean interval (days)				
Related AO1 proposal code(s)				

(9) 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),

☐ Other:

Phase calibration tones:

☑ On (Standard continuum mode),

☐ Off (Standard spectral line mode)

(Include justification of any non-standard choice at (10) below)

(10) Additional notes to the scheduler :

For this experiment, coverage by Arecibo during a period when the projected Arecibo-VSOP baseline covers the full range from less than an Earth diameter to VSOP apogee is critical. This can be accomplished on a few specific dates: the best of these are 14 August 1999 and 19 August 1999 (shown in the attached (u,v) coverage plots). If the VSOP orbit changes, these dates will change. In addition to Arecibo, we request the phased VLA and Bonn to provide additional sensitive baselines and the VLBA to provide full imaging capability (needed to verify that a simple one-component model is adequate to describe the radio core).

(11) 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 229-8510 JAPAN

In addition, e-mail the completed LaTeX file to submit@vsop.isas.ac.jp

Information from the Cover Sheets of scheduled proposals will be made available from the VSOP WWW site.

Proposals must be received at ISAS by 8 May 1998