VSOP AO5 PROPOSAL COVER SHEETS

DEADLINE : 1 February, 2001
SEND TO : VSOG, ISAS, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229-8510, JAPAN

(1) Date prepared : January 31, 2001

(2) Proposal title : Highest resolution Space VLBI observations of S5 1803+784

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(5) Proposal Abstract :

We propose highest angular resolution observations using HALCA and the best equipped ground array (VLBA+EVN), to observe the enigmatic BL Lac object S5 1803+784 in total and polarized flux at 1.6 GHz. By combining these observations with previous ground- and space VLBI observations we plan to resolve the fine scale structure of the intermediate jet at core separations between 5 and 60 mas. We want to make optimal use of this array by tracing the weak total and polarized flux further out than ever possible and search for evidence that this source is a helix of kpc size. We plan to search for motion on these "unusual" large scales. Faraday rotation and differences in Faraday rotation will yield an independant indication of the strength of the bending of the helix. The high dynamic range of the proposed observations will reveal the existence of a counter-jet presumed on the basis of earlier resolution limited observations.

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

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

Observation type:
☑ Continuum, ☐ Spectral Line, ☑ Polarization, ☐ Time critical,
☐ Phase-reference, ☐ 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 (11).

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*)	J1800+7828			
Alternative name	S5 1803+784			
RA(J2000) (hh mm ss.ssss)	18 00 45.6839			
Dec(J2000) (dd mm ss.sss)	+78 28 04.018			
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)				
FWHM of field of view required (mas)				
Min. spectral channels per IF channel				
Correlator averaging time (sec)				
No. of correlating passes (if >1)				
Total flux density (Jy)	∼ 2.3 Jy			
Correlated flux (mJy)	∼ 1000 mJy			
Ground Radio Telescopes:				
Suggested array given at Item (11)?	☑	☐	☐	☐
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 VSOP proposal code(s)	w043, v057g			

(9) VSOP spacecraft observing mode (see Section 3 and Table 2 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 (11) below)

(10) Assistance with preparation of ground telescope schedule files:

☑ VSOG assistance requested, ☐ Consultation desired, ☐ No assistance required

(11) Additional notes to the scheduler :

We would like to search for Faraday rotation between the two 16 MHz IFs of HALCA. If possible, we therefore would like to increase the separation of the center frequencies between IF1 and IF2. As we understand from the proposers guide, frequencies between 1.60 and 1.73 GHz are in principle possible. We therefore suggest to offset IF2 relative to IF1 by a few 10 MHz, depending on technical feasibility of HALCA and ground array. We ask the scheduler for his advice prior to the preparation of the schedule.
We propose to observe with the full VLBA and EVN as ground array.

0016+731 and BL LACERTAE (2200+420) shall serve as calibrator sources for this experiment.

Preferred observing date range is: August-September 2001

We ask for 4 coverages with HALCA = 24hrs total time

(12) Attach a scientific and technical justification, not in excess of 2 pages of text and 2 pages of figures. Refer to the VSOP Announcement of Opportunity for detailed instructions. Preprints and reprints will not be forwarded to the Scientific Review Committee.

EITHER e-mail the completed LaTeX file to submit@vsop.isas.ac.jp and 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

OR e-mail the completed LaTeX Cover Sheets file and, in a separate e-mail, the postscript file of the scientific and technical justification, 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 1 February 2001