VSOP AO2 PROPOSAL COVER SHEETS

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

(1) Date prepared : 5 May, 1998

(2) Proposal title : Testing the cause of spectral turnovers in GPS sources

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(5) Proposal Abstract :

Two general classes of models have been proposed to explain the cause of the spectral break in GPS/CSO sources. In one of them, the Synchrotron Self Absorption (SSA) model, the absorption is external to the source. In the other model, Free-Free Absorption and Induced Compton Scattering (FFA/ICS) are involved and the absorption is due to external ionised gas from the surrounding interstellar medium. Due to the different location of the absorbing component the size of the source observed in the optically thin regime is expected to be different than in the optically thick regime. In particular the for the SSA model the observed image at low frequencies will be larger than at high frequencies while the inverse is true for the FFA/ICS model. We propose to observe 4 CSOs with HALCA at 18 cm to compare with ground VLBI images at 6cm and to attempt to distinguish which model applies to GPS sources.

(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: 4

(8) Details of proposed experiments

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name (J*hhmm*±*ddmm*)	J0713+4349	J0111+3906	J2355+4950	J1227+3635
Alternative name	0710+439	0108+388	2352+495	1225+368
RA(J2000) (hh mm ss.ssss)	07 13 38.164	01 11 37.316	23 55 09.458	12 27 58.732
Dec(J2000) (dd mm ss.ssss)	+43 49 17.205	+39 06 28.103	+49 50 08.340	+36 35 11.913
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)				
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)	1.83	0.5	2.7	2.0
Correlated flux (mJy)	230	250	650	350
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 :

We would like to use both the VLBA and the EVN antennas. We wish to achive good uv coverage in order to image the hotspots of these sources. In particular the Effelsberg antenna will be necessary to provide the sensitivity we require.

(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