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 : April 28, 1998

(2) Proposal title : The B Field Structure of BL Lac Objects on Submas Scales

(3)	INVESTIGATORS	INSTITUTION
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(5) Proposal Abstract :

Of the Active Galactic Nuclei that have been studied with polarization VLBI using ground arrays, BL Lacertae objects are among the most compact and highly polarized. We propose here to make 5 GHz HALCA polarization observations of 20 BL Lacertae objects for which ground-based observations at 5 and 8.4 GHz have revealed very compact components with polarized fluxes that should be sufficient to make polarization imaging using HALCA scientifically fruitful. These observations would give unique information about the origin of the core polarization and the formation and evolution of shocks in these 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: 20

(8) Details of proposed experiments

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name (J*hhmm*±*ddmm*)	0954+658	OJ287	1803+784	0235+164
Alternative name				
RA(J2000) (hh mm ss.ssss)	09 58 47.2	08 54 48.9	18 00 45.7	02 38 38.9
Dec(J2000) (dd mm ss.ssss)	65 33 54.8	20 06 30.6	78 28 04.0	16 36 59.3
Observing frequency band (GHz)	5	5	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)				
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)	1.4	3.0	3.5	3.0
Correlated flux (mJy)	600	1700	1300	1700
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)	v056, v057	v056, v057	v056, v057	v056

	Experiment 5	Experiment 6	Experiment 7	Experiment 8
Source name (J*hhmm*±*ddmm*)	1823+568	1749+096	0735+178	0823+033
Alternative name				
RA(J2000) (hh mm ss.ssss)	18 24 07.1	17 51 32.8	07 38 07.4	08 25 50.3
Dec(J2000) (dd mm ss.ssss)	56 51 01.5	09 39 00.7	17 42 19.0	03 09 24.5
Observing frequency band (GHz)	5	5	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)				
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)	1.2	1.5	3.0	2.1
Correlated flux (mJy)	700	900	1600	1500
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)	v056	v056	v056	

	Experiment 9	Experiment 10	Experiment 11	Experiment 12
Source name (J*hhmm*±*ddmm*)	1334–127	2155–152	0300+471	0745+241
Alternative name				
RA(J2000) (hh mm ss.ssss)	13 37 39.8	21 58 06.3	03 03 35.2	07 48 36.1
Dec(J2000) (dd mm ss.ssss)	-12 57 24.7	-15 01 09.3	47 16 16.3	24 00 24.1
Observing frequency band (GHz)	5	5	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)				
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)	4.6	2.3	1.7	1.2
Correlated flux (mJy)	3800	1000	900	600
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)			v056	v056

	Experiment 13	Experiment 14	Experiment 15	Experiment 16
Source name (J*hhmm*±*ddmm*)	1418+546	1147+245	0814+425	2200+420
Alternative name				BL Lac
RA(J2000) (hh mm ss.ssss)	14 19 46.6	11 50 19.2	08 18 16.0	22 02 43.3
Dec(J2000) (dd mm ss.ssss)	54 23 14.8	24 17 53.8	42 22 45.4	42 16 40.0
Observing frequency band (GHz)	5	5	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)				
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)	1.5	0.8	1.0	3.0
Correlated flux (mJy)	700	500	500	1200
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)	v056	v056	v056	v056

	Experiment 17	Experiment 18	Experiment 19	Experiment 20
Source name (J*hhmm*±*ddmm*)	0048–097	0119+115	0256+075	2131–021
Alternative name				
RA(J2000) (hh mm ss.ssss)	00 50 41.3	01 21 41.6	02 59 27.1	21 34 10.3
Dec(J2000) (dd mm ss.ssss)	-09 29 05.2	11 49 50.4	07 47 39.6	-01 53 17.2
Observing frequency band (GHz)	5	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)				
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)	1.2	1.6	0.6	1.8
Correlated flux (mJy)	600	900	560	1200
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)	v056	v056		

(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 :

The sources 0954+658, OJ287, and 1803+784 are tentatively scheduled for observations during AO period 1, but these observations have not yet been made. If the observations are made, these sources should be removed from the list of proposed sources for AO period 2. The preferred (u, v) coverage is that with maximum resolution.

PREFERRED ARRAY: VLBA + VLA + at least one additional large ground antenna (EF, GBT, WSRT)

It is very desirable to observe with the VLA, not only for sensitivity reasons, but because this "automatically" provides the integrated polarization measurements required for absolute calibration of the polarization position angles. In addition, a number of these sources have displayed rapid (intraday) polarization variability in our previous experiments. Use of the VLA would allowing us to monitor the integrated polarizations and check for the presence of rapid polarization variability during the HALCA observations.

(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