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 : 5/5/97

(2) Proposal title : A Complete Sample of Strong Extragalactic Intra-Day Variable Sources.

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(5) Proposal Abstract :

We propose to image at 5 GHz and at two epochs, the ten strong compact, flat-spectrum, high-amplitude, intra-day variable Parkes sources that we have discovered in our IDV Survey. We specifically wish to constrain the models and Doppler factors for the radiating material through a determination of (or limits to) the brightness temperatures and the determination of structural changes, particularly in the core, between the two epochs. We plan to follow the total flux density variability with ground-based monitoring during the course of the VSOP observations, since these sources can vary by up to 50 flux density monitoring is essential to separate intensity changes that occur during the course of one HALCA observation from apparent structure. Regardless of whether the observed flux density variations are due to intrinsic or extrinsic mechanisms, these IDV sources are likely to possess the smallest angular size and hence the highest brightness temperatures of any extragalactic radio sources known. As such, the VSOP observations proposed here are essential for the planning for future Space VLBI missions.

(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: 10

(8) Details of proposed experiments

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name (J*hhmm*±*ddmm*)	J0348-2749	J0406-3826	J0609-1542	J0648-3044
Alternative name	PKS 0346-279	PKS 0405-385	PKS 0607-157	PKS 0646-306
RA(J2000) (hh mm ss.ssss)	03 48 38.15	04 06 59.03	06 09 40.94	06 48 14.10
Dec(J2000) (dd mm ss.ssss)	-27 49 13.3	-38 26 28.0	-15 42 40.7	-30 44 19.7
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	32	32	32	32
Correlator averaging time (sec)	2	2	2	2
No. of correlating passes (if >1)				
Total flux density (Jy)	1.3	1.5	5.3	1.0
Correlated flux (mJy)	1100	1500	2200	700
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	2	2	2	2
Mean interval (days)	60	80	240	see Item (10)
Related AO1 proposal code(s)	v116	v116	v116	v116

	Experiment 5	Experiment 6	Experiment 7	Experiment 8
Source name (J*hhmm*±*ddmm*)	J0811+0146	J1037-2934	J1051-3138	J1147-3812
Alternative name	PKS 0808+019	PKS 1034-293	PKS 1048-313	PKS 1144-379
RA(J2000) (hh mm ss.ssss)	08 11 26.71	10 37 16.08	10 51 04.78	11 47 01.37
Dec(J2000) (dd mm ss.ssss)	+01 46 52.2	-29 34 02.8	-31 38 14.3	-38 12 11.0
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	32	32	32	32
Correlator averaging time (sec)	2	2	2	2
No. of correlating passes (if >1)				
Total flux density (Jy)	1.6	1.8	1.2	2.5
Correlated flux (mJy)	1600	1800	800	2500
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	2	2	2	2
Mean interval (days)	270	160	160	150
Related AO1 proposal code(s)	v116	v116	v116	v116

	Experiment 8	Experiment 10	Experiment 11	Experiment 12
Source name (J*hhmm*±*ddmm*)	J1522-2730	J1626-2951		
Alternative name	PKS 1519-273	PKS 1622-297		
RA(J2000) (hh mm ss.ssss)	15 22 37.68	16 26 06.02		
Dec(J2000) (dd mm ss.ssss)	-27 30 10.8	-29 51 27.0		
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)				
FWHM of field of view required (mas)				
Min. spectral channels per IF channel	32	32		
Correlator averaging time (sec)	2	2		
No. of correlating passes (if >1)				
Total flux density (Jy)	2.2	3.0		
Correlated flux (mJy)	2200	1400		
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	2	2		
Mean interval (days)	180	170		
Related AO1 proposal code(s)	v116	v116		

(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 :

Suggested preferred array: VLBA, Tidbinbilla, ATCA, Mopra, Hobart, Ceduna, Hartebeesthoek, Usuda, HALCA.
Suggested minimum array: VLBA, ATCA, Mopra, Hobart, Hartebeesthoek, Usuda, HALCA.
The suggested approximate dates of the first and second epochs for each source:
PKS 0346-279 (July 25 1998, Sept 15 1998)
PKS 0405-385 (July 25 1998, Oct 5 1998)
PKS 0607-157 (Mar 5 1999, Oct 20 1999)
PKS 0646-306 (Oct 5 1998, Nov 7 1998) or (Dec 1 1998, Oct 20 1999) or (Mar 5 1999, Nov 7 1999)
PKS 0808+019 (Jan 30 1999, Oct 30 1998)
PKS 1034-293 (Jan 10 1999, Jun 10 1999)
PKS 1048-313 (Jan 10 1999, Jun 10 1999)
PKS 1144-379 (Jan 30 1999, Jul 1 1999)
PKS 1519-273 (Feb 15 1999, Aug 15 1999)
PKS 1622-297 (Mar 1 1999, Aug 20 1999)

(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