VSOP PROPOSAL COVER SHEETS

ID :

TR :

SR :

DEADLINE : 17 November, 1995
SEND TO : VSOP SOG, ISAS, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229, JAPAN

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

(1) Date prepared : 8 - November - 1995

(2) Proposal title : VSOP Observations of 2 Bl-Lac type objects: Mrk421 and Mrk501

(3)	INVESTIGATORS	INSTITUTION
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

We request VSOP observations at 6 and 18 cm of 2 nearby BL-Lac type objects: Mrk421 and Mrk501. Previous global VLBI observations show that Mrk421 has a straight extended parsec scale jet with knots moving at an apparent superluminal velocity, while Mrk501 has a very distorted (helical) jet and a possible counter-jet. In this object no motion have been detected up to now. The requested high resolution observations compared with the large amount of available data from γ to radio for both objects, will allow the study of the nature and physic of the central engine in BL-Lac type objects. In addition a comparison with high power sources (quasar) and low power radio galaxies will allow us to test unified scheme models.

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

Object type:

☑ AGN, ☐ Masers, ☐ Stellar, ☐ Other :

Experiment type:

☑ Single-observation, ☑ Monitoring, ☐ Polarization,
☐ Time-critical, ☐ Target of Opportunity, ☐ Other :

(7) 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),
☐ 2 channel x 32 MHz, 1-bit,
☐ 1 channel x 32 MHz, 2-bit

Phase calibration tones:

☑ On (Standard continuum mode),
☐ Off (Standard spectral line mode)

(Include justification of any non-standard choice at (14) below)

(8) Ground radio telescope setup

Polarization :

☑ VSOP Standard (IEEE LCP), ☐ Non-standard :

Recording mode :

☑ As for VSOP spacecraft (Standard), ☐ Other :

(9) Investigator participation in scheduling

☐ PI (or co-I) wishes to participate in scheduling ground radio telescopes
☐ PI (or co-I) wishes to participate in scheduling the space radio telescope

(10) Preferred correlator (see Sections 9.11 and 12 of VSOP Proposer's Guide):

☐ No preference, ☐ Mitaka, ☑ Socorro, ☐ Other :

(11) Preferred post-correlation data analysis location:

☑ Home Institution, ☐ Mitaka, ☑ NRAO AOC, ☐ JIVE, ☐ Other

(12) Post-correlation data analysis assistance required:

☐ None, ☑ Consultation, ☐ Extensive help

(13) Details of proposed experiments

An 'experiment' is one or more observations of one source in one wavelength band.
A request to observe the same source in all 3 wavelength bands requires 3 columns to be filled in.
To observe the same source at the same frequency multiple times – a 'monitoring experiment' – requires only one column to be filled in.
Number of experiments in this proposal: 4

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	Mrk421	Mrk501	Mrk421	Mrk501
RA (hh mm ss.s)	11 01 40.98	16 52 11.74	11 01 40.98	16 52 11.74
Dec (dd mm ss)	+38 28 42.8	+39 50 25.1	+38 28 42.8	+39 50 25.1
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	5	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)				
Min. spectral channels per IF channel				
Correlator averaging time (sec)				
FWHM of field of view required (mas)				
No. of correlating passes (if >1)				
Measured total flux density (Jy)	0.7	1.5	0.9	1.5
Measured correlated flux density on $>$ 5000 km baseline (Jy)	0.29	0.51	0.37	0.55
Image RMS needed (mJy/beam)	0.5	0.5	0.5	0.5
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	8	8	8	8
Number of large telescopes	3	3	3	3
Suggested array given at Item (14)	☐	☐	☐	☐
Minimum acceptable:				
Number of medium telescopes	5	5	5	5
Number of large telescopes	1	1	1	1
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	3	3	4	4
Minimum acceptable length (orbits)	2	2	2	2
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)				
'No holes' (u,v) coverage?	☐	☐	☐	☐
Or maximum resolution (u,v) coverage?	☐	☐	☐	☐
Preferred range of dates for scheduling (for monitoring experiments give range for 1st observation only)	to	to	to	to
For monitoring programs:				
Number of observations	2	2		
Mean interval (days)	365	365		
Acceptable variance from mean (days)	100	90		

(14) Additional notes to the scheduler :

Mrk421 has a compact core which shows a flux density variability: minimum 0.22 Jy, maximum 0.47 Jy at 5 GHz (global VLBI) in the time range 1980 - 1983
Mrk501: the correlated flux density at 1.6 GHz has been estimated taking in account the 5 GHz correlated flux in global VLBI observations

(15) 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 JAPAN
In addition, e-mail the completed LaTeX file to submit@vsopgw.isaslan1.isas.ac.jp

Cover Sheets of accepted proposals will be made available to the astronomical community.

Proposals must be received at ISAS by 17 November 1995