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 : Nov. 11, 1995

(2) Proposal title : Spectral evolution of the $\gamma-$bright jet in PKS 0528+134

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

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(5) Proposal Abstract :

We propose multi-frequency SVLBI monitoring of the $\gamma-$active sub-pc scale jet in the high redshift blazar PKS 0528+134 ($z = 2.07$). We intend to follow in total intensity and polarization (polarization optionally requested for 5 GHz only) the motion of jet components along their strongly bent paths. Differential relativistic effects should lead to quite dramatic variations of velocity, spectrum and polarization as the superluminal components move along the spatial bendings of the jet. Combined with available and complementing ground-VLBI monitoring (geodetic- and mm-VLBI), high dynamic range SVLBI imaging will provide a deep insight in relativistic jet physics, particularly those relating $\gamma-$ray activity and jet production.

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

Object type:

☑ AGN, ☐ Masers, ☐ Stellar, ☐ Other :

Experiment type:

☐ Single-observation, ☑ Monitoring, ☑ Polarization, see (14)
☐ 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 :optional 16 MHz LCP&RCP (see (14))

(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: 3

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	0528+134	0528+134	0528+134	
RA (hh mm ss.s)	05:28:05.2049	05:28:05.2049	05:28:05.2049	
Dec (dd mm ss)	13:29:42.199	13:29:42.199	13:29:42.199	
J2000 or B1950?	B1950	B1950	B1950	
Observing frequency band (GHz)	22	5	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)	~ 5	~ 3	~ 2	
Measured correlated flux density on > 5000 km baseline (Jy)	1	2.4	1.7	
Image RMS needed (mJy/beam)	1	0.5	0.5	
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	13	13	13	
Number of large telescopes	4	4	4	
Suggested array given at Item (14)	☑	☑	☑	☐
Minimum acceptable:				
Number of medium telescopes	8	8	8	
Number of large telescopes	1	1	1	
Suggested array given at Item (14)	☑	☑	☑	☐
Length of observation:				
Preferred length (orbits)	3	3	3	
Minimum acceptable length (orbits)	1	1	1	
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)	0	45	90	
'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)	97-01-01 to 97-04-30	97-01-01 to 97-04-30	97-01-01 to 97-04-30	to
For monitoring programs:				
Number of observations	3	2	1	
Mean interval (days)	60	120	360	
Acceptable variance from mean (days)	60	90	90	

(14) Additional notes to the scheduler :

pref. array: VLBA, EVN, NR, VL, EF, HT, TI, (UD or NB)
med. array 1: VLBA, EF, HT
med. array 2: EVN, (VL or NR), TI, UD
min. array : EVN, HO, MR, CG, (PA or TI), (UD or NB)
Depending on tape resources we *optionally* request polarization observations at 6 cm for 2 epochs. Depending on source strength (0528+134 is strongly variable) polarization recording with reduced bandwidth (using only one 16 MHz channel of VSOP) might be possible. The ground array then could record LCP & RCP also at 128 Mbits/s saving a factor 2 in tapes relative to the 256 Mbits/s full polarization mode.
Alternative times for scheduling if January-April 1997 should not be possible:
August 1997; December 1997–March 1998

(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