

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 : 13-Nov-1995

(2) Proposal title : Self-similarity in the Jets of the S5-quasars 0836+71 and 1928+73

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

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(5) Proposal Abstract :

Since more than 15 years, we monitored pc-structure and evolution of the prominent kpc-jets in the S5-quasars 0836+71 and 1928+73. Both sources are members of a flux density limited complete sample of 13 flat spectrum radio sources, for which we have data from radio to γ -ray bands. Complex superluminal kinematics and jet-morphologies characterize both objects. We propose multi-frequency & multi-epoch space-VLBI imaging with high dynamic range, to study in detail the spectral and kinematic properties of these jets with highest spatial resolution, in particular the evolution in time & frequency of the instability-patterns observed in both jets. With this we hope to decide if the jet-physics is governed by the magnetic field or by 'standard' relativistic gas dynamics (MHD-jet or KH-jet ?) and if the moving jet-oscillations in the jet of 1928+738 are driven by a binary black hole at its base (jet-precession ?).

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

Object type:

☒ AGN, ☐ Masers, ☐ Stellar, ☐ Other :

Experiment type:

☐ Single-observation, ☒ Monitoring, ☒ Polarization (only 5 GHz),
☐ 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 : (see (14) below)

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

Recording mode :

☒ As for VSOP spacecraft (Standard), ☐ Other : LCP & RCP for 5 GHz only 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: 6

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	0836+71	0836+71	0836+71	1928+73
RA (hh mm ss.s)	08:36:21.5586	08:36:21.5586	08:36:21.5586	19:28:49.3510
Dec (dd mm ss)	71:04:22.463	71:04:22.463	71:04:22.463	73:51:44.901
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	1.6	5	22	1.6
<i>Continuum observations:</i>				
Standard VSOP freq. channels?	☒	☒	☒	☒
Channel A range (MHz)				
Channel B range (MHz)				
<i>Spectral line observations:</i>				
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)	3.8	2.5	1.8	3.6
Measured correlated flux density on > 5000 km baseline (Jy)	1.	1.3	0.5	1.1
Image RMS needed (mJy/beam)	0.2	0.1	0.4	0.2
<i>Ground Radio Telescopes:</i>				
<i>Preferred choice:</i>				
Number of medium telescopes	13	13	13	13
Number of large telescopes	4	4	4	4
Suggested array given at Item (14)	☒	☒	☒	☒
<i>Minimum acceptable:</i>				
Number of medium telescopes	8	8	8	8
Number of large telescopes	2	2	2	2
Suggested array given at Item (14)	☒	☒	☒	☒
<i>Length of observation:</i>				
Preferred length (orbits)	4	4	4	4
Minimum acceptable length (orbits)	2	2	2	2
<i>Scheduling constraints:</i>				
Preferred P.A. of beam <i>major</i> axis (deg)	130	130	130	80
‘No holes’ (<i>u,v</i>) coverage?	☒	☒	☒	☒
<i>Or</i> maximum resolution (<i>u,v</i>) coverage?	☐	☐	☐	☐
Preferred range of dates for scheduling (for monitoring experiments give range for 1st observation only)	97-11-01 to 98-04-30	97-11-01 to 98-04-30	97-11-01 to 98-04-30	98-04-01 to 98-09-30
<i>For monitoring programs:</i>				
Number of observations	1	2	3	1
Mean interval (days)	360	200	120	270
Acceptable variance from mean (days)	90	90	60	90

	Experiment 5	Experiment 6	Experiment 7	Experiment 8
Source name	1928+73	1928+73		
RA (hh mm ss.s)	19:28:49.3510	19:28:49.3510		
Dec (dd mm ss)	73:51:44.901	73:51:44.901		
J2000 or B1950?	B1950	B1950		
Observing frequency band (GHz)	5	22		
<i>Continuum observations:</i>				
Standard VSOP freq. channels?	☒	☒	☐	☐
Channel A range (MHz)				
Channel B range (MHz)				
<i>Spectral line observations:</i>				
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)	2.8	2.3		
Measured correlated flux density on > 5000 km baseline (Jy)	0.8	0.6		
Image RMS needed (mJy/beam)	0.1	0.3		
<i>Ground Radio Telescopes:</i>				
<i>Preferred choice:</i>				
Number of medium telescopes	13	13		
Number of large telescopes	4	4		
Suggested array given at Item (14)	☒	☒	☐	☐
<i>Minimum acceptable:</i>				
Number of medium telescopes	8	8		
Number of large telescopes	2	2		
Suggested array given at Item (14)	☒	☒	☐	☐
<i>Length of observation:</i>				
Preferred length (orbits)	4	4		
Minimum acceptable length (orbits)	2	2		
<i>Scheduling constraints:</i>				
Preferred P.A. of beam <i>major</i> axis (deg)	80	80		
‘No holes’ (<i>u,v</i>) coverage?	☒	☒	☐	☐
<i>Or</i> maximum resolution (<i>u,v</i>) coverage?	☐	☐	☐	☐
Preferred range of dates for scheduling (for monitoring experiments give range for 1st observation only)	98-04-01 to 98-09-30	98-04-01 to 98-09-30	to	to
<i>For monitoring programs:</i>				
Number of observations	2	3		
Mean interval (days)	120	90		
Acceptable variance from mean (days)	90	60		

(14) Additional notes to the scheduler :

Pref Array = VLBA, EVN, EB, NR, (VL or UD or GO)

Med. Array = VLBA, EF, NR

Min. Array = EVN, EF, (VL or UD or NR)

An *optional* request for dual polarization recording at 5 GHz only is being made for the GRT, subject to the availability of tape resources. If not granted the standard VSOP and GRT mode is implied. If tape resources are granted for dual polarization recording on the ground array, this need not be a full 256 Mbps mode. The aggregate bit rate could be reduced by preferential recording during periods at which coverage on the ground-space baselines is maximized. Limited observations of standard polarization calibrators would be necessary on the ground array.

(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, Sagami-hara

Kanagawa 229 JAPAN

In addition, e-mail the completed $\text{\LaTeX}$ 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