

# VSOP AO4 PROPOSAL COVER SHEETS

DEADLINE : 2 October, 2000

SEND TO : VSOG, ISAS, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229-8510, JAPAN

(1) Date prepared : September 28 1999

(2) Proposal title : The Parsec-Scale Jet in Superluminal Quasar 3C 273

(3)	INVESTIGATORS	INSTITUTION
P.I.	A.P. Lobanov	MPIfR, Germany
co-I.	J.A. Zensus	MPIfR, Germany
co-I.	Z. Abraham, E. Carrara	IAG, São Paulo, Brazil
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		

(4) Principal Investigator (or contact person) details...

Name : J.A. Zensus	Address : MPIfR
E-mail : azensus@mpifr-bonn.mpg.de	: Auf dem Hügel 69
Fax : +49 228 525 229	: Bonn 53121
Phone : +49 228 525 295	: GERMANY
	:

(5) Proposal Abstract :

The archetypical quasar 3C273 is an excellent candidate for studies with VSOP. Our ongoing monitoring with VSOP has shown that the jet of 3C273 is transversely resolved, and can be decomposed, for the first time, into two distinct emitting components, possibly related to the plasma instabilities in the jet. We propose here to continue VSOP monitoring of 3C273 at 5 GHz, and study in detail structural evolution in the parsec-scale jet of this source. Our scientific objectives are: (1) measuring the transverse jet profiles; (2) measuring velocity gradients across the jet; (3) measuring component variations closer to the core than possible from the ground (where mm-VLBI imaging has not yet been able to produce detailed and reliable images); and (4) high-dynamic range imaging of the jet structure and polarization properties.

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

Object type:

☒ AGN, ☐ Maser, ☐ Stellar, ☐ Pulsar, ☐ Other :

Observation type:

☒ Continuum, ☐ Spectral Line, ☒ Polarization, ☐ Time-critical,  
☐ Phase-reference, ☐ 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 (11).

The number of experiments in this proposal is: 1

**(8) Details of proposed experiments**

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name ( <i>Jhhmm±ddmm</i> )	J1229+0203			
Alternative name	3C273			
RA(J2000) (hh mm ss.ssss)	12 29 06.6997			
Dec(J2000) (dd mm ss.ssss)	+02 03 08.598			
Observing frequency band (GHz)	5			
<i>Continuum observations:</i> Standard VSOP freq. channels? Channel A range (MHz) Channel B range (MHz)	<input type="checkbox"/>   	<input type="checkbox"/>   	<input type="checkbox"/>   	<input type="checkbox"/>   
<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) 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)	32.2			
Correlated flux (mJy)	10000			
<i>Ground Radio Telescopes:</i> Suggested array given at Item (11)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>GRT observing mode:</i> 128Mbps LCP (standard) 128Mbps LCP/RCP 256Mbps LCP/RCP	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<i>Preferred correlator:</i> No preference Mitaka Penticton Socorro	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<i>Monitoring programs:</i> Number of observations Mean interval (days)	3 180			
Related VSOP proposal code(s)	V067, W068			

(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 (11) below)

(10) Assistance with preparation of ground telescope schedule files:

- ☐ VSOP assistance requested, ☒ Consultation desired, ☐ No assistance required

(11) Additional notes to the scheduler :

We request the VLBA and at least one large antenna to support the observations from the ground. The VLBA is needed to match properly the images from our previous VSOP observations of 3C 273. A large antenna is requested to ensure fringe detections to the spacecraft.

(12) Attach a scientific and technical justification, not in excess of 2 pages of text and 2 pages of figures. Refer to the VSOP Announcement of Opportunity for detailed instructions. Preprints and reprints will not be forwarded to the Scientific Review Committee.

**EITHER** e-mail the completed L<sup>A</sup>T<sub>E</sub>X file to submit@vsop.isas.ac.jp and 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 229-8510 JAPAN

**OR** e-mail the completed L<sup>A</sup>T<sub>E</sub>X Cover Sheets file and, in a separate e-mail, the postscript file of the scientific and technical justification, 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 2 October 2000**