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 : 30 September 2000

(2) Proposal title : Jet/cloud interactions in 3C120

(3)	INVESTIGATORS	INSTITUTION
P.I.	José L. Gómez	IAA, Granada (Spain)
co-I.	Denise C. Gabuzda	JIVE (Netherlands)
co-I.	Alan P. Marscher, Svetlana G. Jorstad	Boston University (USA)
co-I.	Antonio Alberdi, Iván Agudo	IAA, Granada (Spain)
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		

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

Name : José L. Gómez
E-mail : jlgomez@iaa.es
Fax : +34 958 814530
Phone : +34 958 121300 Ext. 1218

Address : Instituto de Astrofísica de
: Andalucía (IAA)
: Apdo. 3004
: Granada 18080, Spain
:

(5) Proposal Abstract :

Program BG073, and its continuation BG113, consisting of 22 and 43 GHz VLBA observations of 3C120, have represented, to our knowledge, the most through study of a relativsitic jet to date, completed with the highest resolution and polarization. Thanks to this extensive monitoring we have been able to trace superluminal components in 3C120 that exhibit cycles of brightening and fadin over timescales of months while showing rotation of the magnetic field. A possible explanation could be found in terms of an interaction with the external medium and free–free absorption by an ionized gas cloud to the near side of the jet. In order to test these hypotheses we propose further 5 GHz dual polarization VSOP observations to obtain a better determination of the rotation measure and opacity by comparison with dual polarization VLBA observations at 15, 22 and 43 GHz.

(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 (J*hhmm*±*ddmm*)	J0433+053			
Alternative name	3C120			
RA(J2000) (hh mm ss.ssss)	04 33 11.1			
Dec(J2000) (dd mm ss.sss)	05 21 16			
Observing frequency band (GHz)	5 GHZ			
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				
Correlator averaging time (sec)				
No. of correlating passes (if >1)				
Total flux density (Jy)	5			
Correlated flux (mJy)	1000			
Ground Radio Telescopes:				
Suggested array given at Item (11)?	☑	☐	☐	☐
GRT observing mode:				
128Mbps LCP (standard)	☐	☐	☐	☐
128Mbps LCP/RCP	☐	☐	☐	☐
256Mbps LCP/RCP	☑	☐	☐	☐
Preferred correlator:				
No preference	☐	☐	☐	☐
Mitaka	☐	☐	☐	☐
Penticton	☐	☐	☐	☐
Socorro	☑	☐	☐	☐
Monitoring programs:				
Number of observations				
Mean interval (days)				
Related VSOP proposal code(s)				

(9) VSOP spacecraft observing mode (see Section 3 and Table 2 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:

☐ VSOG assistance requested, ☑ Consultation desired, ☐ No assistance required

(11) Additional notes to the scheduler :

Our strongly preferred array is VLBA+one or more large ground antennas (phased VLA, EF, GBT, WSRT). This type of array has been proven effective for previous VSOP polarization observations. It is desirable to observe with the phased VLA, since this automatically provides the integrated polarization measurements required for absolute calibration of the polarization position angles.

We hope our ongoing monitoring program BG113 will still be active when the VSOP observations are to be scheduled; if not, we will propose for VLBA observations at 15, 22, and 43 GHz specifically as support for the VSOP observations. We would like to have the VSOP observations as close as possible in time to these higher-frequency VLBA observations.

(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 LaTeX 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, Sagamihara
Kanagawa 229-8510 JAPAN

OR e-mail the completed LaTeX 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