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 : November 1st, 1995

(2) Proposal title : VSOP Polarimetric Observations of NGC315

(3)	INVESTIGATORS	INSTITUTION
P.I.	W. D. Cotton	N.R.A.O. - U.S.A.
co-I.	L. Feretti, G. Giovannini	I.R.A. - CNR and Astronomy Dpt., ITALY
co-I.	L. Lara	I.R.A. - CNR, ITALY and IAA-CSIC, SPAIN
co-I.	T. Venturi	I.R.A. - CNR, ITALY
co-I.		
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(4) Principal Investigator (or contact person) details...

Name : W.D. Cotton
Address : N.R.A.O.
:520, Edgemont Road
:VA 22903-2475
:U.S.A.

Internet : BCOTTON@NRAO.EDU
Other e-mail :
Fax : 1-804-296 0278
Telephone : 1-804-296 0319

(5) Proposal Abstract :

We propose VSOP polarization sensitive observations of the FRI radio galaxy NGC 315 at 18 cm wavelength to augment existing ground based VLBI polarimetric observations with comparable resolution at 6 cm. This will allow separating the effects of magnetic field orientation, optical depth, and Faraday rotation on much finer size scales than is possible from ground based observations alone. The particular problem we would like to address is the apparent lack of motion observed in the source which might be expected in the beamed emission model on the basis of the asymmetries on the jets at both parsec and kiloparsec scales. Multifrequency images of polarized emission will help in the comparison of the observations with the predictions of various models. Moreover we will obtain a high resolution spectral index map. It will show the regions where particle acceleration is present and will help in understanding the nature of knots.

(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 : Dual Polarization

Recording mode :

☐ As for VSOP spacecraft (Standard), ☑ Other :Four (2 LCP, 2 RCP) 1-bit 16 MHz channels

(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: 2

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	NGC315	AO0235+164		
RA (hh mm ss.s)	00 55 05.63	02 35 52.63		
Dec (dd mm ss)	+30 04 57.1	+16 24 04.0		
J2000 or B1950?	B1950	B1950		
Observing frequency band (GHz)	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)	1.4	1.26		
Measured correlated flux density on > 5000 km baseline (Jy)	0.16	1.1		
Image RMS needed (mJy/beam)	0.5	1.0		
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	12	12		
Number of large telescopes	3	3		
Suggested array given at Item (14)	☑	☑	☐	☐
Minimum acceptable:				
Number of medium telescopes	10	10		
Number of large telescopes	1	1		
Suggested array given at Item (14)	☑	☑	☐	☐
Length of observation:				
Preferred length (orbits)	4	1		
Minimum acceptable length (orbits)	2	1		
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				
Mean interval (days)				
Acceptable variance from mean (days)				

(14) Additional notes to the scheduler :

GRT preferred telescopes: VL VLBA + other telescopes with dual polarization capability
GRT minimum telescopes: VL VLBA (because of their well known very good polarimetry capability)
The observation of AO0235+164 should be scheduled just before or after the observations of NGC315 to have a better calibration.

(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