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 10, 1995

(2) Proposal title : The Compact Core of NRAO 530

(3)	INVESTIGATORS	INSTITUTION
P.I.	Geoffrey C. Bower	Radio Astronomy Lab, UC Berkeley
co-I.	Don Backer	Radio Astronomy Lab, UC Berkeley
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

We propose two epochs of 1.6 and 5 GHz observations of the compact, flat spectrum QSO NRAO 530. These observations will allow us to address the emission mechanisms in this unusual source. Our high frequency monitoring, which we will continue to match VSOP observations, has shown frequency independent structure from 86 to 15 GHz. If this trend continues to decimeter wavelengths we expect to see a significant violation of the inverse Compton limit. The specific structure will allow us to address the nature of the flat spectrum in this source: Is it the superposition of multiple distinct components or is it from a single component with a self-similar geometry? The expected range of sizes, 100 to 1000 μarcsec, is well-matched to VSOP resolution at these frequencies. Two epochs of observation compensate for the effects of variability in this active source.

(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 :

Recording mode :

☑ As for VSOP spacecraft (Standard), ☐ Other :

(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	NRAO 530	NRAO 530		
RA (hh mm ss.s)	17 30 13.5338	17 30 13.5338		
Dec (dd mm ss)	-13 02 45.780	-13 02 45.780		
J2000 or B1950?	B1950	B1950		
Observing frequency band (GHz)	1.6	5		
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	5		
Measured correlated flux density on > 5000 km baseline (Jy)	0.3	1.7		
Image RMS needed (mJy/beam)				
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	5	5		
Number of large telescopes	1	1		
Suggested array given at Item (14)	☑	☑	☐	☐
Minimum acceptable:				
Number of medium telescopes	3	3		
Number of large telescopes	0	0		
Suggested array given at Item (14)	☑	☑	☐	☐
Length of observation:				
Preferred length (orbits)	2	2		
Minimum acceptable length (orbits)	1	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)	97-03-01 to 97-10-01	97-03-01 to 97-10-01	to	to
For monitoring programs:				
Number of observations	2	2		
Mean interval (days)	365	365		
Acceptable variance from mean (days)	180	180		

(14) Additional notes to the scheduler :

Correlated flux density for 5 GHz is an estimate, assuming $S = 2$ Jy and $\theta = 0.5$ mas. Correlated flux density for 1.6 GHz is based on 2.3 GHz TDRSS observation.

Suggested preferred arrays for 1.6 GHz are: VLBA,HO,MR,CG,PA,TI
Suggested preferred arrays for 5 GHz are: VLBA,HO,MR,CG,PA

Suggested minimum array for 1.6 GHz and 5 GHz is: VLBA

(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