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 : 9-November-1995

(2) Proposal title : Sub-mas Structure in Lobe-dominated Quasars & Radio Galaxies

(3)	INVESTIGATORS	INSTITUTION
P.I.	D.H. Hough	Trinity University, San Antonio, TX, USA
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

We propose VSOP plus VLBA (plus Effelsberg) observations at 5 GHz to make Phase 1 maps of the relatively strong nuclei in four double-lobed extragalactic radio sources: the lobe-dominated quasars 3C207 and 3C245 and the FRII radio galaxies 3C109 and 3C133. The superior beam size and shape as compared to ground-based VLBI will enable us to probe details of the exceedingly compact (<0.5 mas) structures known to exist in these objects. This will immediately permit tests of jet alignment and bending and later, with second-epoch Phase 2 maps, allow searches for superluminal motion. These investigations of compact morphology, jet curvature, and parsec-scale jet speeds will be of great value in testing AGN unification scenarios.

(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: 4

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	3C245	3C207	3C109	3C133
RA (hh mm ss.s)	10 40 06.0	08 38 01.7	04 10 54.9	04 59 54.3
Dec (dd mm ss)	12 19 15	13 23 06	11 04 40	25 12 12
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	5	5	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)	0.9	0.5	0.3	0.2
Measured correlated flux density				
on > 5000 km baseline (Jy)	0.5	0.5	0.1	0.1
Image RMS needed (mJy/beam)	0.5	0.5	0.5	0.5
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	10	10	10	10
Number of large telescopes	0	0	1	1
Suggested array given at Item (14)	☑	☑	☑	☑
Minimum acceptable:				
Number of medium telescopes	7	7	7	7
Number of large telescopes	0	0	1	1
Suggested array given at Item (14)	☑	☑	☑	☑
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	2	2	2	2
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)	20	0	45	0
'No holes' (u,v) coverage?	☐	☐	☐	☐
Or maximum resolution (u,v) coverage?	☑	☑	☑	☑
Preferred range of dates for scheduling	97-05-01	98-01-15	98-01-15	98-02-01
(for monitoring experiments give	to	to	to	to
range for 1st observation only)	97-06-01	98-02-15	98-02-15	98-03-01
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

(14) Additional notes to the scheduler :

Exp 1, Pref/Min Array = 7/10 VLBA stations
Exp 2, Pref/Min Array = 7/10 VLBA stations
Exp 3, Pref/Min Array = 7/10 VLBA stations, EF
Exp 4, Pref/Min Array = 7/10 VLBA stations, EF
We understand that all 10 VLBA stations must be requested, but should as few as 7 be available for any reason, we still consider this adequate. We consider Effelsberg essential to the success of Exp 3 and Exp 4.
Correlated flux densities of 3C109 and 3C133 are estimates; see scientific justification for explanation.

(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