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 : 7 November, 1995

(2) Proposal title : γ-ray loud and quiet AGN with VSOP and SHEVE at 5 GHz

(3)	INVESTIGATORS	INSTITUTION
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co-I.	D. Jauncey, J. Reynolds, A. Tzioumis, E. King	ATNF
co-I.	J. Lovell, P. McCulloch, M. Costa	University of Tasmania
co-I.	P. Dewney, W. Cannon	DRAO, ISTS
co-I.	G. Nicolson	Hartebeesthoek RAO
co-I.	R. Preston, D. Murphy, D. Jones, D. Meier	Jet Propulsion Laboratory
co-I.	P. Edwards, H. Hirabayashi	ISAS
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

We propose to image, using VSOP in conjunction with the SHEVE ground array, all of the EGRET identified (γ-ray loud) AGN south of $\delta = -40$. In addition we propose to image a sample of γ-ray quiet AGN which have been selected on the basis that their radio and optical properties are matched to the γ-ray loud AGN.
Using Doppler factors estimated from VSOP measured radio brightness temperatures to derive limits on the jet speeds and angles to our line-of-sight we can obtain an excellent indication of the importance of relativistic beaming to the γ-ray properties of AGN.
We are currently engaged in monitoring these γ-ray quiet and loud AGN with Earth based VLBI observations, since the best constraints on beaming models come from a combination of the brightness temperature and superluminal motion constraints.

(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 : S-2

(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 : Canadian S-2

(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: 5

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	PKS 0208-512	PKS 0537-441	PKS 0637-752	PKS 0438-436
RA (hh mm ss.s)	02 10 46.200	05 38 50.362	06 35 46.508	04 40 17.180
Dec (dd mm ss)	-51 01 01.892	-44 05 08.939	-75 16 16.816	-43 33 08.603
J2000 or B1950?	J2000	J2000	J2000	J2000
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)	3.31	4.00	5.85	6.94
Measured correlated flux density on $>$ 5000 km baseline (Jy)	3.0	3.2	3.3	1.2
Image RMS needed (mJy/beam)	$\sim$ 10	$\sim$ 10	$\sim$ 10	$\sim$ 10
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	3	3	3	3
Number of large telescopes	1	1	1	1
Suggested array given at Item (14)	☑	☑	☑	☑
Minimum acceptable:				
Number of medium telescopes	2	2	2	2
Number of large telescopes	1	1	1	1
Suggested array given at Item (14)	☑	☑	☑	☑
Length of observation:				
Preferred length (orbits)	4	4	4	4
Minimum acceptable length (orbits)	3	3	3	3
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)	97-06-15 to 97-08-15	97-01-01 to 97-07-31	97-01-01 to 97-07-31	97-01-01 to 97-07-31
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 5	Experiment 6	Experiment 7	Experiment 8
Source name	PKS 2355-534			
RA (hh mm ss.s)	23 57 53.266			
Dec (dd mm ss)	-53 11 13.689			
J2000 or B1950?	J2000			
Observing frequency band (GHz)	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)	1.52			
Measured correlated flux density on > 5000 km baseline (Jy)	1.0			
Image RMS needed (mJy/beam)	$\sim$ 10			
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	3			
Number of large telescopes	1			
Suggested array given at Item (14)	☑	☐	☐	☐
Minimum acceptable:				
Number of medium telescopes	2			
Number of large telescopes	1			
Suggested array given at Item (14)	☑	☐	☐	☐
Length of observation:				
Preferred length (orbits)	4			
Minimum acceptable length (orbits)	3			
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)	97-07-01 to 97-09-31	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

(14) Additional notes to the scheduler :

Suggested preferred array: Phased Australia Telescope Compact Array (or Parkes), Mopra, Hobart, Hartebeesthoek, VSOP

Suggested minimum array: Phased Australia Telescope Compact Array (or Parkes), Hobart, Hartebeesthoek, VSOP

(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