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 : 8 Nov. 1995

(2) Proposal title : A morphological and spectral study of GPS galaxies and quasars.

(3)	INVESTIGATORS	INSTITUTION
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

Gigahertz Peaked Spectrum (GPS) sources are a very luminous class of compact radio sources. At low resolution many show a compact double morphology. Only recently, it has been shown that some of the larger GPS sources peaking at low frequencies have a weak flat spectrum component situated in between the two dominant mini-lobes. We propose VSOP observations at 1.6 and 5 GHz (below and at the spectral peak) of a sample of 11 GPS sources peaking at about 5 GHz in frequency. The data will be combined with groundbased, matched-beam, images at 5 and 15 GHz in order to: (i) make a morphological classification, (ii) locate the core, if any (iii) determine spectra of optically thin and thick components (iv) derive the magnetic field strength and compare its value with the equipartition strength and (v) address the issue of GPS-galaxy / GPS-quasar unification. We propose this investigation as a Key Project in AGN.

(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: 22

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	0108+388	0108+388	0248+430	0248+430
RA (hh mm ss.s)	01 08 47.2	01 08 47.2	02 48 18.5	02 48 18.5
Dec (dd mm ss)	+38 50 32	+38 50 32	+43 02 57	+43 02 57
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	1.6	5	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)	10	20	10	20
FWHM of field of view required (mas)	10	10	20	20
No. of correlating passes (if >1)				
Measured total flux density (Jy)	1.33	0.44	1.43	0.83
Measured correlated flux density on > 5000 km baseline (Jy)	0.80	0.40	1.24	0.80
Image RMS needed (mJy/beam)	1	1	1	1
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	15	15	15	15
Number of large telescopes	2	2	2	2
Suggested array given at Item (14)	☑	☑	☑	☑
Minimum acceptable:				
Number of medium telescopes	6	4	6	6
Number of large telescopes	0	2	0	0
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	1	1	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)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 3	Experiment 4	Experiment 5	Experiment 6
Source name	0552+398	0552+398	0615+820	0615+820
RA (hh mm ss.s)	05 52 01.4	05 52 01.4	06 15 32.7	06 15 32.7
Dec (dd mm ss)	+39 48 22	+39 48 22	+82 03 56	+82 03 56
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	1.6	5	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)	10	20	10	20
FWHM of field of view required (mas)	10	10	10	10
No. of correlating passes (if >1)				
Measured total flux density (Jy)	5.42	1.75	1.00	0.78
Measured correlated flux density on > 5000 km baseline (Jy)	5.0	1.5	0.8	0.5
Image RMS needed (mJy/beam)	1	1	1	1
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	15	15	15	15
Number of large telescopes	2	2	2	2
Suggested array given at Item (14)	☑	☑	☑	☑
Minimum acceptable:				
Number of medium telescopes	6	6	6	4
Number of large telescopes	0	0	0	2
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	1	1	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)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 9	Experiment 10	Experiment 11	Experiment 12
Source name	0636+680	0636+680	0646+600	0646+600
RA (hh mm ss.s)	06 36 47.62	06 36 47.62	06 46 04.1	06 46 04.1
Dec (dd mm ss)	68 01 27.2	68 01 27.2	60 05 14.2	60 05 14.2
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	1.6	5	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)	10	20	10	20
FWHM of field of view required (mas)	10	10	10	10
No. of correlating passes (if >1)				
Measured total flux density (Jy)	0.50	0.13	1.00	0.44
Measured correlated flux density on > 5000 km baseline (Jy)	0.48	0.10	0.95	0.40
Image RMS needed (mJy/beam)	1	1	1	1
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	15	13	15	15
Number of large telescopes	2	4	2	2
Suggested array given at Item (14)	☐	☐	☐	☐
Minimum acceptable:				
Number of medium telescopes	4	2	6	4
Number of large telescopes	2	4	0	2
Suggested array given at Item (14)	☑	☑	☑	☑
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	1	1	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)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 13	Experiment 14	Experiment 15	Experiment 16
Source name	2021+614	2021+614	1333+459	1333+459
RA (hh mm ss.s)	20 21 13.29	20 21 13.29	13 33 15.7	13 33 15.7
Dec (dd mm ss)	61 27 18.1	61 27 18.1	45 57 57	49 57 57
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	1.6	5	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)	10	20	10	20
FWHM of field of view required (mas)	20	20	10	10
No. of correlating passes (if >1)				
Measured total flux density (Jy)	2.73	2.1	0.70	0.35
Measured correlated flux density on > 5000 km baseline (Jy)	2.0	2.0	0.65	0.33
Image RMS needed (mJy/beam)	1	1	1	1
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	15	15	15	15
Number of large telescopes	2	2	2	2
Suggested array given at Item (14)	☑	☑	☑	☑
Minimum acceptable:				
Number of medium telescopes	6	6	4	4
Number of large telescopes	0	0	2	2
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	1	1	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)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 17	Experiment 18	Experiment 19	Experiment 20
Source name	1404+286	1404+286	1550+582	1550+582
RA (hh mm ss.s)	14 04 45.61	14 04 45.61	15 50 55.6	15 50 55.6
Dec (dd mm ss)	28 41 29.2	28 41 29.2	58 15 37	58 15 37
J2000 or B1950?	B1950	B1950	B1950	B1950
Observing frequency band (GHz)	5	1.6	5	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)	10	20	10	20
FWHM of field of view required (mas)	10	10	5	5
No. of correlating passes (if >1)				
Measured total flux density (Jy)	2.97	0.83	0.37	0.23
Measured correlated flux density on > 5000 km baseline (Jy)	2.8	0.7	0.24	0.20
Image RMS needed (mJy/beam)	1	1	1	1
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	15	15	13	13
Number of large telescopes	2	2	4	4
Suggested array given at Item (14)	☑	☑	☑	☑
Minimum acceptable:				
Number of medium telescopes	6	6	2	2
Number of large telescopes	0	0	4	4
Suggested array given at Item (14)	☐	☐	☐	☐
Length of observation:				
Preferred length (orbits)	2	2	2	2
Minimum acceptable length (orbits)	1	1	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)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

	Experiment 21	Experiment 22	Experiment 23	Experiment 24
Source name	1622+663	1622+663		
RA (hh mm ss.s)	16 22 50.4	16 22 50.4		
Dec (dd mm ss)	66 30 54	66 30 54		
J2000 or B1950?	B1950	B1950		
Observing frequency band (GHz)	5	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)	10	20		
FWHM of field of view required (mas)	5	5		
No. of correlating passes (if >1)				
Measured total flux density (Jy)	0.52	0.20		
Measured correlated flux density on > 5000 km baseline (Jy)	0.23	0.18		
Image RMS needed (mJy/beam)	1	1		
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	13	13		
Number of large telescopes	4	4		
Suggested array given at Item (14)	☑	☑	☐	☐
Minimum acceptable:				
Number of medium telescopes	2	2		
Number of large telescopes	4	4		
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)	to	to	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

(14) Additional notes to the scheduler :

1) We prefer to have a global array composed of the VLBA, 6 EVN stations including at least one large telescope, and one large telescope in the U.S.A. (17 stations).
2) For a number of weak sources we request 4 large telescopes and a smaller number of medium telescopes.
3) The number of telescopes is more important than the position angle of the beam.
4) The preferred dates for scheduling have been entered in the table giving the source sample.

(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