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 : 09-Nov-1995

(2) Proposal title : Space-VLBI multi-frequency astrometry on the quasar pair 1038+528A/B

(3)	INVESTIGATORS	INSTITUTION
P.I.	Maria J. Rioja	JIVE, Dwingeloo, The Netherlands
co-I.	Richard W. Porcas	MPIfR, Bonn, Germany
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(4) Principal Investigator (or contact person) details...

Name : Maria J. Rioja
Address : JIVE
:Postbus 2
:7990 AA Dwingeloo
:The Netherlands
Internet : rioja@nfra.nl
Other e-mail
:porcas@mpifr-bonn.mpg.de
Fax :+31 521 597 332
Telephone : +31 521 595 226

(5) Proposal Abstract :

The pair of sources 1038+528 A and B, separated by 33", have been monitored for a decade with dual frequency ground-VLBI for astrometric purposes. Their exceptionally small angular separation makes it possible to reach an astrometric precision limited only by the noise in the phase delay observables (at μas level). Nevertheless, an interpretation of results in terms of source structural variations with time and frequency is limited by the interferometer beam size. Space VLBI offers a unique chance to improve this resolution. We propose observations at 1.6 and 5 GHz. Even if the large uncertainty in the determination of the satellite orbit prevents any improvement over the astrometric precisions currently reached with GRT array alone, the higher resolution maps at each frequency will allow a much more precise interpretation of the astrometric results.

(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	1038+52C	1038+52C		
RA (hh mm ss.s)	10 41 47.8	10 41 47.8		
Dec (dd mm ss)	52 33 41	52 33 41		
J2000 or B1950?	J2000	J2000		
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)	2	2		
Measured total flux density (Jy)	0.36 / 0.11	0.42 / 0.14		
Measured correlated flux density on > 5000 km baseline (Jy)	> .175 / .11	> .270 / .06		
Image RMS needed (mJy/beam)	.2	.2		
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	10	11		
Number of large telescopes	3	2		
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	4		
Minimum acceptable length (orbits)	2	2		
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)	∼ -60	∼ -60		
'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)	98-02-01 to 98-02-28	98-02-01 to 98-02-28	to	to
For monitoring programs:				
Number of observations				
Mean interval (days)				
Acceptable variance from mean (days)				

(14) Additional notes to the scheduler :

EXP 1, Pref array: VLBA, EF, JO, GO
Min Acc array: VLBA, EF

EXP 2, Pref array: VLBA, EF, NO, NR
Min Acc array: VLBA, EF

We request that improved orbit determination methods be used for these observations if available.
Two correlation passes are required. Please contact PI to provide coordinates for the two field centers.
1.6 GHz correlated fluxes unknown; they were derived from spectral index between 3.6 and 13cm.

(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