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 : 10 November 1995

(2) Proposal title : Investigation of three gravitational milli-lens candidates

(3)	INVESTIGATORS	INSTITUTION
P.I.	Peter Wilkinson	Univ. Manchester, Jodrell Bank, UK
co-I.	David Henstock	Univ. Manchester, Jodrell Bank, UK
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(4) Principal Investigator (or contact person) details...

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(5) Proposal Abstract :

This is a proposal to examine three of the best gravitational milli-lens candidates amongst 329 flat-spectrum sources examined mainly during the CJ VLBI surveys. After systematic follow–up observations with the VLBA there are relatively few surviving candidates. We propose to observe the best three of these with VSOP at 5 GHz. We desire the maximum resolution in order to match that of ground–based observations at 22 GHz. Two of the three candidates require the Effelsberg and/or the phased VLA to be sure of good SNR to VSOP. If there are no milli-lensed systems amongst the 329 sources then uniformly distributed compact objects in the mass range 10^6–10^9M$_\odot$ cannot make a significant contribution to the closure density of the Universe.

(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: 3

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name	B0738+313	B0740+768	B1809+568	
RA (hh mm ss.s)	074110.70368	074714.62258	181003.32027	
Dec (dd mm ss)	311200.2258	763917.2644	564922.9587	
J2000 or B1950?	J2000	J2000	J2000	
Observing frequency band (GHz)	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)	2.6	0.59	0.58	
Measured correlated flux density on > 5000 km baseline (Jy)	0.6 (15 GHz)	0.2	0.2	
Image RMS needed (mJy/beam)	0.1	0.1	0.1	
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	17	17	17	
Number of large telescopes	2	2	2	
Suggested array given at Item (14)	☑	☑	☑	☐
Minimum acceptable:				
Number of medium telescopes	5–10	5–10	5–10	
Number of large telescopes	0	1	1	
Suggested array given at Item (14)	☑	☑	☑	☐
Length of observation:				
Preferred length (orbits)	2	2	2	
Minimum acceptable length (orbits)	2	2	2	
Scheduling constraints:				
Preferred P.A. of beam *major* axis (deg)	~ 90	~ 20	~ 65	
'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)	97-08-28 to 98-03-31	97-04-01 to 98-04-31	97-01-01 to 97-05-31	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 = EVN+VLBA
Exp 2: Pref. array = EVN+VLBA+Y27
Exp 3: Pref. array = EVN+VLBA+Y27
Exp 1: Min. array = EVN or VLBA+Y27
Exp 2: Min. array = EVN or VLBA+Y27

(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