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 : 13-Nov-1995

(2) Proposal title : SVLBI of the Nearby Class II Radio Galaxy 3C111

(3)	INVESTIGATORS	INSTITUTION
P.I.	E. Preuss	MPIfR, Bonn, Germany
co-I.	K.I. Kellermann	NRAO, Charlottesville, USA
co-I.	W. Alef	MPIfR, Bonn, Germany
co-I.	D. Gabuzda	Lebedev Physical Institute, Moscow, Russia
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		

(4) Principal Investigator (or contact person) details...

Name : E. Preuss
Address : Max-Planck-Institut
: Auf dem Hügel 69
: D-53121 Bonn
: Germany

Internet : epreuss@mpifr-bonn.mpg.de
Other e-mail :
Fax : +49-228-525-229
Telephone : +49-228-525-280

(5) Proposal Abstract :

Of all FR II radio galaxies which can be imaged with VLBI, 3C111 is the closest *and* has the strongest pc-scale radio core. It has strong mm outbursts and exhibits clear superluminal motion in the 1-sided jet on the mas-scale. Due to the high spatial resolution available with SVLBI of $\sim$ 1.5light-months $\cdot$ ($h^{-1} \cdot 22$ GHz/ν) 3C111 is an ideal object for studying the jet formation, spectra, trajectories and separations of core and components, as well as the quasar – FR II unification hypothesis. 2 epochs of VSOP+VLBA+EF+NR observations (of 3 orbits each) are requested at 22 GHz, 5 GHz and 1.6 GHz, with polarization imaging at 5 GHz as a secondary objective, in connection with ground based mm-VLBI.

(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 : best UV coverage

(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 : (see (14) below)

☐ VSOP Standard (IEEE LCP), ☑ Non-standard : RCP & LCP

Recording mode :

☐ As for VSOP spacecraft (Standard), ☑ Other : 4 chan x 16 MHz x 2-bit (see (14))

(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	3C111	3C111	3C111	
RA (hh mm ss.s)	04:18:21.3262	04:18:21.3262	04:18:21.3262	
Dec (dd mm ss)	38:01:35.676	38:01:35.676	38:01:35.676	
J2000 or B1950?	J2000	J2000	J2000	
Observing frequency band (GHz)	22	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)				
FWHM of field of view required (mas)				
No. of correlating passes (if >1)				
Measured total flux density (Jy)	1.3	1.0	0.9	
Measured correlated flux density on > 5000 km baseline (Jy)	~ 0.5	0.3 - 0.5	~ 0.4	
Image RMS needed (mJy/beam)	0.2	0.1	0.1	
Ground Radio Telescopes:				
Preferred choice:				
Number of medium telescopes	10	10	10	
Number of large telescopes	2	2	2	
Suggested array given at Item (14)	☑	☑	☑	☐
Minimum acceptable:				
Number of medium telescopes	10	10	8	
Number of large telescopes	1	1	1	
Suggested array given at Item (14)	☑	☑	☑	☐
Length of observation:				
Preferred length (orbits)	3	3	3	
Minimum acceptable length (orbits)	2	2	2	
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)	97-01-01 to 97-03-01	97-01-01 to 97-03-01	97-01-01 to 97-03-01	to
For monitoring programs:				
Number of observations	2	2	2	
Mean interval (days)	360	360	360	
Acceptable variance from mean (days)	45	45	45	

(14) Additional notes to the scheduler :

Exp. 2: (5 GHz; preferably with polarization): Pref. Array = VLBA, EF, NR; Min. Array = VLBA, EF. Exp. 1 & 3: (22 & 1.6 GHz, standard mode for GRT): Pref. Array = VLBA, EF, NR; Min. = EVN The nominal bit rate for full sensitivity VSOP polarization observations for the GRT is 256 Mbits/sec, but the aggregate bit rate could be reduced by preferentially recording during periods at which coverage on the ground-space baselines is maximized. Limited observations of standard polarization calibrators would be necessary on the ground array (see (9) above). If dual polarization recording is not approved, the standard VSOP and GRT observing mode will be used, and the minimal array for the 5 GHz observations (Exp. 2) is the same as for Exp. 1 & 3.

(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