VSOP AO2 PROPOSAL COVER SHEETS

DEADLINE : 8 May, 1998
SEND TO : VSOG, ISAS, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229-8510, JAPAN

(1) Date prepared : May 1, 1998

(2) Proposal title : A deLaval Nozzle in the Gamma-Ray Blazar NRAO 530?

(3)	INVESTIGATORS	INSTITUTION
P.I.	Geoffrey C. Bower	MPIfR - Bonn, Germany
co-I.	Donald C. Backer	UC Berkeley, USA
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		
co-I.		

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

Name : Geoffrey C. Bower
E-mail : gbower@mpifr-bonn.mpg.de
Fax : +49 228 525 229
Phone : +49 228 525 217

Address : MPIfR - Bonn
: Auf dem Hügel 69
: D53121 Bonn
: Germany
:

(5) Proposal Abstract :

We propose a single observation at 1.6 and 5 GHz of the gamma-ray blazar NRAO 530. We expect to detect proper motion of features in the jet identified with our earlier VSOP observations. Further, we predict that we will identify a new component created during a dramatic millimeter flare in early 1995. This is an excellent opportunity to follow a very bright flare from the sub- to super-mas scales over a wide frequency range. Our continuing studies with 22, 43 and 86 GHz VLBI show that this component went through complicated non-linear evolution on scales of less than 0.5 mas (= 2 pc). The best interpretation of this phenomena is the existence of a deLaval nozzle at a radius of 0.25 mas. Detecting and tracking this component on larger scales will significantly improve our understanding of the relationship between the pre- and post-nozzle physical properties and the formation of large-scale jet features.

(6) Proposal Category (indicate all that apply):
Object type:
☑ AGN, ☐ Maser, ☐ Stellar, ☐ Pulsar, ☐ Other :
Observation type:
☑ Continuum, ☐ Spectral Line, ☐ Polarization, ☐ Time-critical, ☐ Other :

(7) Number of proposed experiments

An 'experiment' is one or more observations of one source at a fixed HALCA set-up. A request to observe the same source at 1.6 GHz and separately at 5 GHz requires two columns to be filled in in item (8) below. A request to observe the same source with HALCA simultaneously observing at 1.6 GHz and 5 GHz requires one column to be filled in. Multi-epoch observations of the same source at the same frequency – a 'monitoring experiment' – requires only one column to be filled in. Suggested observing dates, especially for for time-critical and monitoring experiments, should be specified in item (10).

The number of experiments in this proposal is: 2

(8) Details of proposed experiments

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name (J*hhmm*±*ddmm*)	J1733-1304	J1733-1304		
Alternative name	NRAO 530	NRAO 530		
RA(J2000) (hh mm ss.ssss)	17 33 02.7057	17 33 02.7057		
Dec(J2000) (dd mm ss.ssss)	-13 04 49.5479	-13 04 49.5479		
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)				
FWHM of field of view required (mas)				
Min. spectral channels per IF channel				
Correlator averaging time (sec)				
No. of correlating passes (if >1)				
Total flux density (Jy)	4	5		
Correlated flux (mJy)	50-1000	500-2500		
Ground Radio Telescopes:				
Suggested array given at Item (10)?	☑	☑	☐	☐
GRT observing mode:				
128Mbps LCP (standard)	☑	☑	☐	☐
128Mbps LCP/RCP	☐	☐	☐	☐
256Mbps LCP/RCP	☐	☐	☐	☐
Preferred correlator:				
No preference	☑	☑	☐	☐
Mitaka	☐	☐	☐	☐
Penticton	☐	☐	☐	☐
Socorro	☐	☐	☐	☐
Monitoring programs:				
Number of observations				
Mean interval (days)				
Related AO1 proposal code(s)	V028A	V028B		

(9) VSOP spacecraft observing mode (see Section 3 and Table 5 of the VSOP Proposer's Guide):

- [x] 2 channel x 16 MHz, 2-bit (Standard mode),
- [ ] Other:

Phase calibration tones:

- [x] On (Standard continuum mode),
- [ ] Off (Standard spectral line mode)

(Include justification of any non-standard choice at (10) below)

(10) Additional notes to the scheduler :

We request a southern hemisphere array to provide the best north-south uv coverage. The best epoch for observations is September 1999. A large GRT such as Usuda must be employed to insure fringe detection, especially at 1.6 GHz.

(11) 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 229-8510 JAPAN

In addition, e-mail the completed LaTeX file to submit@vsop.isas.ac.jp

Information from the Cover Sheets of scheduled proposals will be made available from the VSOP WWW site.

Proposals must be received at ISAS by 8 May 1998