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 : 30 April 1998

(2) Proposal title : The Structure of Extremely High Redshift Quasars.

(3)	INVESTIGATORS	INSTITUTION
P.I.	L.I. Gurvits	JIVE, The Netherlands
co-I.	S. Frey	FÖMI SGO, Hungary
co-I.	R.T. Schilizzi	JIVE, The Netherlands
co-I.	K.I. Kellermann	NRAO, USA
co-I.	A.P. Lobanov	MPIfR, Germany
co-I.	E.C. Moran	U.C. Berkeley, USA
co-I.	S.A. Laurent-Muehleisen	LLNL, USA
co-I.	I.I.K. Pauliny-Toth	MPIfR, Germany
co-I.		

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

Name : Leonid Gurvits
E-mail : lgurvits@jive.nfra.nl
Fax : 31–521–597332
Phone : 31–521–596514

Address : JIVE
: P.O.Box 2, 7990 AA
: Dwingeloo
: The Netherlands
:

(5) Proposal Abstract :

The study of compact radio structures in extremely high redshift quasars is focused on two scientific topics:
(i) Frequency-dependent properties of the milliarcsecond structures in radio–loud quasars vis-a-vis various phenomena at other wavelengths, particularly in the X-ray band.
(ii) Creation of a basis for cosmological tests using the milliarcsecond structure of QSOs as a "standard" object.
With this proposal we continue a study which has begun with the VSOP AO#1 project V047. The present list of sources comprises 8 first epoch observations and 9 second epoch observations (the latter is a continuation of the project V047). The proposal is based on the results of the project V047 available to date.

(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: 17

(8) Details of proposed experiments

	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Source name (J*hhmm*±*ddmm*)	J0017+8125	J0017+8125	J2217+0220	J2217+0220
Alternative name	0014+813	0014+813	2215+020	2215+020
RA(J2000) (hh mm ss.ssss)	00 17 08.47	00 17 08.47	22 17 48.24	22 17 48.24
Dec(J2000) (dd mm ss.ssss)	+81 35 08.1	+81 35 08.1	+02 20 10.7	+02 20 10.7
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)				
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)	0.55	0.68	0.64	0.78
Correlated flux (mJy)	420	290	295	180
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)	V047	V047	V047	V047

	Experiment 5	Experiment 6	Experiment 7	Experiment 8
Source name (J*hhmm*±*ddmm*)	J1510+5702	J1746+6226	J1746+6226	J1445+0958
Alternative name	1508+572	1745+624	1745+624	1442+101
RA(J2000) (hh mm ss.ssss)	15 10 02.92	17 46 14.03	17 46 14.03	14 45 16.47
Dec(J2000) (dd mm ss.ssss)	+57 02 43.4	+62 26 54.7	+62 26 54.	+09 58 36.1
Observing frequency band (GHz)	5	5	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)	0.28	0.58	0.76	1.34
Correlated flux (mJy)	280	410	280	700
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)	V047	V047	V047	V047

	Experiment 9	Experiment 10	Experiment 11	Experiment 12
Source name (J*hhmm*±*ddmm*)	J1445+0958	J1354−0206	J1354−0206	J1405+0415
Alternative name	1442+101	1351−018	1351−018	1402+044
RA(J2000) (hh mm ss.ssss)	14 45 16.47	13 54 06.90	13 54 06.90	14 05 01.12
Dec(J2000) (dd mm ss.ssss)	+09 58 36.1	−02 06 03.2	−02 06 03.2	+04 15 35.8
Observing frequency band (GHz)	1.6	5	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)	2.42	0.82	0.85	0.96
Correlated flux (mJy)	760	810	450	600
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)	V047	V047	V047	V047

	Experiment 13	Experiment 14	Experiment 15	Experiment 16
Source name (J*hhmm*±*ddmm*)	J1405+0415	J1559+0304	J1559+0304	J0354+0441
Alternative name	1402+044	1557+032	1557+032	0351+045
RA(J2000) (hh mm ss.ssss)	14 05 01.12	15 59 30.97	15 59 30.97	03 54 24.43
Dec(J2000) (dd mm ss.ssss)	+04 15 35.8	+03 04 48.3	+03 04 48.3	+04 41 17.1
Observing frequency band (GHz)	1.6	5	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)	0.56	0.48	0.56	0.45
Correlated flux (mJy)	425	205	200	370
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)	V047	V047	V047	V047

	Experiment 17	Experiment 18	Experiment 19	Experiment 20
Source name (J*hhmm*±*ddmm*)	J0354+0441			
Alternative name	0351+045			
RA(J2000) (hh mm ss.ssss)	03 54 24.43			
Dec(J2000) (dd mm ss.ssss)	+04 41 17.1			
Observing frequency band (GHz)	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)				
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)	0.54			
Correlated flux (mJy)	315			
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)	V047			

(9) 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),
- ☐ Other:

Phase calibration tones:

- ☑ 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 :

1). Correlated flux densities on $>$ 5000 km baseline are estimated from ground baseline observations at another frequency and/or shorter baselines for experiments 5, 7, 11, 13, 15, 17.
2). For imaging of sub-Junsky-level sources we prefer a global array composed of the EVN and VLBA telescopes. The choice of the correlator (Socorro) is defined by the array.
3) For the two weak sources (1508+572 and 0351+045, experiments 5, 16, ans 17 respectively) we request a global array including at least one large telescopes in Europe (Eb), and at least one large telescope in the USA (VLA-27).

(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