Svetloe Radio Astronomical Observatory

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Abstract

This report summarizes information on recent activities at the Svetloe Radio Astronomical Observatory (SvRAO). During the previous year a number of changes were carried out at the observatory to improve some technical parameters and upgrade some units to required status. The report provides also an overview of current geodetic VLBI activities and gives an outlook for the next year.

1. Introduction

Svetloe Radio Astronomical Observatory (SvRAO) (Fig. 1) was founded by the Institute of Applied Astronomy (IAA) as the first station of the Russian VLBI network QUASAR [1].

Figure 1. Svetloe observatory.

2. Radio Telescope and Registrations

– Electrical part of gear and pointing system of Radio Telescope was upgraded in 2008.

– Mark 5B and RDR-1 (RADIOASTRON) recorders were put into operation (only for domestic sessions in 2008).

The RDR-1 terminals will be used in 2009 for observations within the RADIOASTRON space mission.

Table 1. Technical parameters of the radio telescope.

Year of construction	2000
Mount	AZEL
Azimuth range	$\pm 270^\circ$ (from south)
Elevation range	from -5° to 95°
Maximum azimuth - velocity - tracking velocity - acceleration	 1.5 °/s 1.5 ′/s 0.2 $^\circ/s^2$
Maximum elevation - velocity - tracking velocity - acceleration	 0.8 °/s 1.0 ′/s 0.2 $^\circ/s^2$
Pointing accuracy	better than $10''$
Configuration	Cassegrain (with asymmetrical subreflector)
Main reflector diameter	32 m
Subreflector diameter	4 m
Focal length	11.4 m
Main reflector shape	quasi-paraboloid
Subreflector shape	quasi-hyperboloid
Surface tolerance of main reflector	± 0.5 mm
Frequency capability	1.4–22 GHz
Axis offset	$+7.5 \pm 0.5$ mm

3. Participation in IVS and Domestic Observational Programs

During 2008 Svetloe station participated in 72 24-hour IVS-R4, IVS-R1, IVS-T2, EURO, R&D, and CONT08 sessions and in 25 IVS Intensive sessions (Table 2).

SvRAO fulfilled ten daily observations in the frame of domestic program Ru-E for VLBI-determination of all Earth orientation parameters, and nine 8-hour sessions for obtaining Universal Time.

Test observation sessions were performed in the frame of EVN programs.

Table 2. List of IVS sessions observed at SvRAO in 2008.

Month	IVS-Int	IVS-R4	IVS-R1	IVS-T2	CONT08	R&D	EURO	EVN	EK
January	2	4							
February	2	4		1					
March	2	4	1						
April	2	5		1		1			
May	5	4				1			
June	2	4						1	
July	1	4		1		1			
August	2	2	1		15				2
September	2	4		1					
October	2	5							3
November	1	3					1		
December	2	4							
Total	25	47	2	4	15	3	1	1	5

4. Co-location GPS and Laser Ranging System (LRS)

- The TopCon GPS/GLONASS/GALILEO receiver with meteo station WXT-SIO was tested and put into operation.
- LRS "Sazhen-TM" will be mounted in 2010–2011.

5. Outlook

Our plans for the coming year are the following:

- To participate in IVS-R1, IVS-R4, IVS-T2, IVS-R&D, EUROPE, and IVS-Intensive observational sessions.
- To participate in domestic observational programs for obtaining Earth orientation parameters and Universal Time.
- To continue geodetic control of the antenna parameters.

References

[1] Site http://www.ipa.nw.ru.