Seshan VLBI Station Report for 2002

Xiaoyu Hong, Wenren Wei, Shiguang Liang, Xinyong Huang

Abstract

The Sheshan (also called Seshan) 25-meter radio telescope is an alt-az antenna run by Shanghai Astronomical Observatory (SHAO), Chinese Academy of Sciences (CAS). It is one of the five main astronomical facilities of Chinese National Astronomical Observatories. The VLBI station is a member of the EVN, IVS, and APT. We give a short report of the current status and future plans of Seshan VLBI station of Shanghai Astronomical Observatory as an IVS Network station.

1. Introduction

The telescope is located about 30 km west of Shanghai. The radio telescope started its operation in 1987.

Station Location: Longitude: 121^o 11' 59" E; Latitude: 31^o 05' 57" N.
Height above sea level: 5 meters (ground).

It is one of the five main astronomical facilities of Chinese National Astronomical Observations. The VLBI station is a member of the EVN, APT and IVS. There is a two-station MKIV data processor and an analysis center of IERS of various space geodetic observations in Shanghai observatory.

2. Facilities

2.1. Antenna

Diameter : 25 meters
Antenna type: Kashegelun Beam wave-guide
Seat-rack type: Azimuth-pitching ring
Main surface precision: 0.65 mm (rms)
Point precision: 20"(rms)
Rolling range: Azimuth : $-86^o - 425^o$; Elevation: $5^o - 88^o$
Maximum rolling speed: Azimuth : 0.55^o/sec
Elevation: 0.28^o/sec

2.2. Receiver

Five bands for VLBI observations are available at Sheshan VLBI station: L band (18 cm), C band (6 cm), K band (1.3 cm), and S/X band (13/3.6 cm). The parameters of the receivers are listed in Table 1. Column 1 gives the observation band. The frequency range is listed in column 2, followed by the efficiency of each band in column 3. The receiver type, system temperature, and polarization model are listed in columns 4, 5 and 6, respectively.

The L, C, and K bands are used for astrophysics and S/X double frequencies are used for geodesy. X band is also used for astrophysical observations sometimes.

Table 1. VLBI Receivers of Seshan Satation

Band (cm) (1)	**Bandwidth** (MHz) (2)	**Efficiency** (%) (3)	**Type** (4)	T_{system} (K) (5)	Polarization (6)
18	1620-1680	40	Room Temperature	$\sim$ 100	LCP & RCP
13	2150-2350	45	Room Temperature	$\sim$ 100	RCP
6	4700-5100	58	Cryogenic	45-50	LCP
3.6	8200-9000	48	Cryogenic	$\sim$ 50	RCP
1.3	22100-22600	$\sim$20	Cryogenic	$\sim$110	RCP & LCP

2.3. Recording System

VLBA, MKIV and S2 recording systems are available now at Seshan VLBI station. MKIV upgrade of Seshan station has completed in 2000. Seshan station has participated in the two-head recording test with 512 Mbit/s organized by EVN in Oct. 2001. Fringes were found to Seshan, both head-stacks successful. The performance of the observing system of Shanghai station has been improved over the last few years.

The Field System has been upgraded to 9.5.17 version and it works well for Seshan station in the second half of 2002. The MKIV recording system works well for EVN and IVS observations, and S2 recording system work well for VSOP observation. Two head stacks recording system has been tested successfully and good fringes have been found to Seshan station.

3. Personnel

There are some changes of the staff in Seshan station. The main staff members at Seshan VLBI Station are listed in following Table 2.

Table 2 - The main staff in Seshan VLBI Station

Name	**Position**	**Working area**	**email address**
Xiaoyu Hong	Professor	Head of station	xhong@center.shao.ac.cn
Wenren Wei	Professor	Chief Engineer	wwr@center.shao.ac.cn
Shi-guang Liang	Professor	Microwave	sgliang@center.shao.ac.cn
Zhihan Qian	Professor	Advisor	qzh@center.shao.ac.cn
Xinyong Huang	Senior Engineer	VLBI friend	xhuang@center.shao.ac.cn
Zhuhe Xue	Senior Engineer	Terminal software	zhxue@center.shao.ac.cn
Jiazheng He	Senior Engineer	Antenna control	jzhe@center.shao.ac.cn
Qing-yuan Fan	Senior Engineer	Antenna control	qyfan@center.shao.ac.cn
Song-lin Chen	Engineer	Microware	slchen@center.shao.ac.cn
Bin Li	Engineer	Microware	bing@center.shao.ac.cn
Jinqing Wang	Engineer	operator	jqwang@center.shao.ac.cn
Huihua Li	Engineer	operator	hhlee@center.shao.ac.cn
Lingling Wang	Engineer	operator	llwang@center.shao.ac.cn

4. Current Status and Activities

A rapid frequency switching system is being restructured in June 2002. The mechanical parts have been completed. The re-equipment of the last mirror has worked well for the S/X and C bands observations at present.

Sixteen geodetic experiments have been run by Seshan Station in 2002. And 24 geodetic experiments will be operated during 2003.

5. Future Plans

A new Hydrogen Maser Clock has been ordered from Datum for Seshan VLBI station. We expect to receive it by the end of 2003.