

Nanshan VLBI Station Report for 2007

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Abstract

The Nanshan 25-meter radio telescope is operated by Urumqi Observatory. This report describes the activities and the status of Nanshan VLBI station as an IVS network station in 2007.

1. Introduction

The station is located 70 km south of Urumqi, the capital city of Xinjiang Uygur Autonomous Region of China. The station is affiliated with the Urumqi Observatory of the National Astronomical Observatories, CAS. We contribute to IVS in geodetic VLBI observations. The Nanshan VLBI station has participated in domestic VLBI experiments and as one of the VLBI ground stations tracking the Chinese Chang'E satellite. Urumqi also participated in the Japanese SELENE observation. The telescope participated in real-time experiments among the Chinese Network. We are grateful for the kind help and support from the VLBI experts within the IVS. The Urumqi Observatory is willing to continue the collaboration in international VLBI activities.

2. Telescope Status

2.1. Antenna

- Diameter: 25 meter
- Antenna type: Modified Cassegrain wave-guide
- Seat-rack type: Azimuth-pitching ring
- Main surface precision: 0.40 mm (rms)
- Pointing precision: 15" (rms)
- Rolling range: Azimuth: -270° to 270° ; Elevation: 5° to 88°
- Maximum rolling speed: Azimuth: $1.0^{\circ}/\text{sec}$; Elevation: $0.5^{\circ}/\text{sec}$

2.2. Receiver

The basic specifications of the receivers are given in Table 1.

2.3. Recording System

Mark 5, Mark IV, Mark II, and K5 recording systems are available now at the Nanshan VLBI station. The performance of the observing system has been improved over the last year. A new FS computer is in use at Nanshan, and the Field System has been upgraded to version 9.9.2 and works well. The p-cal control system has been updated, and the parameters of S/X band receivers are sampled from the FS software.

Table 1. Specifications of receivers

Parameters				Freq. Range (MHz)	
1.3 cm	LCP	T _{sys} =190K	DPFU=0.057	22100–24000	
3.6 cm	RCP	T _{sys} =110K	DPFU=0.093	8100–8900	
6 cm	dual	T _{sys} =22K	DPFU=0.105	4700–5110	
13 cm	RCP	T _{sys} =75K	DPFU=0.096	2150–2450	
18 cm	dual	T _{sys} =21K	DPFU=0.088	1400–1720	
30 cm	LCP	T _{sys} =160K	DPFU=0.06	800–1200	
49 cm	dual	T _{sys} =?	DPFU=?	305–345	not tested yet
92 cm	dual	T _{sys} =?	DPFU=?	560–660	not tested yet

2.4. Time and Frequency System

Nanshan's no. 11 H-maser has been upgraded at ShAO, and it is in good status. The other two H-masers, the No. 13 and the MHM2010 imported from the Symmetricom company in the United States, work well. A new time and frequency system has operated continuously since its installation at the Nanshan station in November 2005, and it works well.

3. Personnel

Table 2. The main staff at Nanshan VLBI Station

Name	Position	Working area	e-mail
Na Wang	Professor	Station chief	na.wang@uao.ac.cn
Aili Yusup	Professor	Chief engineer	aliyu@uao.ac.cn
Zhengwen Sun	Senior engineer	Microwave, Receiver	sunzw@uao.ac.cn
Xiang Liu	Professor	VLBI friend	liux@uao.ac.cn
Yousuo Dong	Senior engineer	Antenna control	dongys@uao.ac.cn
Maozheng Chen	Senior engineer	Receiver	mzchen@uao.ac.cn
Aili Esamdin	Scientist	Astronomy	aliyi@uao.ac.cn
Jarken Yesembek	Scientist	Astronomy	jerken@uao.ac.cn
Weixia Wang	Senior engineer	Receiver	wangwx@uao.ac.cn
Minghui Shao	Senior engineer	Time and Freq., Terminal	shaomh@uao.ac.cn
Wenjun Yang	Engineer	Terminal	yangwj@uao.ac.cn
Shiqiang Wang	Engineer	Antenna	Wangshq@uao.ac.cn
Hua Zhang	Engineer	Terminal, Time and Freq.	zhangh@uao.ac.cn
Guanghui Li	Engineer	Network, Computer	ligh@uao.ac.cn
Jun Ma	Engineer	Receiver	majun@uao.ac.cn
Chenyu Chen	Engineer	Antenna	chency@uao.ac.cn
Xiangfeng Wang	Engineer	Network, Computer	wangxf@uao.ac.cn

4. Nanshan Geodetic VLBI Observations during 2007

Nanshan participated in the following 6 geodetic VLBI sessions during 2007 as listed in table 3. All experiments were recorded using Mark 5A. The telescope has been kept in a good condition, and all geodetic 24-hour experiments did well in 2007.

Table 3. Geodetic VLBI experiments observed by Urumqi Observatory during 2007.

Experiment	Date	Remarks (problems)
T2049	02.06	OK
T2050	05.15	OK
T2051	07.31	OK
T2052	11.27	OK
APSG20	09.11	OK
APSG21	10.10	OK

5. Future Plan

A new 1.3 cm dual polarization cryogenic receiver will be built in 2008. A dual band for both 92 cm and 49 cm receiver systems will be tested and used in 2008.