

# Nanshan VLBI Station Report for 2011

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## Abstract

The Nanshan 25-meter radio telescope is operated by Xinjiang Astronomical Observatory. This report describes the activities and the status of the Nanshan VLBI station as an IVS network station in 2011.

## 1. Introduction

The Nanshan VLBI station is located 70 km south of Urumqi, the capital city of the Xinjiang Uygur Autonomous Region of China. The station is affiliated with the Xinjiang Astronomical Observatory of the National Astronomical Observatories of CAS. In 2011, we participated in a total of 230 domestic and international VLBI sessions and contributed to IVS in geodetic VLBI observations. The Nanshan VLBI station has participated in domestic VLBI experiments as one of the VLBI ground stations tracking the Chinese Chang'E satellite. In addition, a GPS station, as a part of the IGS network, is located near the VLBI telescope.



Figure 1. The Nanshan station, Xinjiang Astronomical Observatory, NAOC, CAS.

## 2. Telescope Status

### 2.1. Antenna

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



Figure 2. The 25-m, modified Cassegrain radio telescope of the Xinjiang Astronomical Observatory.

### 2.2. Receivers

The basic specifications of the receivers and the antenna sensitivities are given in Table 1. The new 1.3 cm dual cooling receiver was installed in 2011.

Table 1. Specifications of receivers.

Parameters				Freq. Range (MHz)
1.3 cm	dual	Tsys= 45K	DPFU=0.08	22000–24200
3.6 cm	RCP	Tsys= 60K	DPFU=0.093	8100–8900
6 cm	dual	Tsys= 22K	DPFU=0.11	4700–5110
13 cm	RCP	Tsys= 50K	DPFU=0.096	2150–2450
18 cm	dual	Tsys= 24K	DPFU=0.088	1400–1720
30 cm	LCP	Tsys=160K	DPFU=0.06	800–1200

### 2.3. Recording Systems

The recording systems available at the Nanshan VLBI station are Mark 5B, Mark IV, Mark II, and K5. The performance of the observing system was improved in the report year. The Field System has been upgraded to version 9.10.4, and it works well. The DBBC system, which was built at Shanghai Observatory (SHAO), was installed at Urumqi for domestic VLBI observations with the Mark 5B recorder. The traditional BBC system is still being used for international VLBI observations together with the Mark 5B recorder.

### 2.4. Time and Frequency System

There are three H-masers at the Nanshan Station: the MHM2010 imported from Symmetricom company of the U. S. plus the No. 13 and No. 90 H-masers made in Shanghai. The time and frequency comparison system operates continuously.

## 3. IVS Observations in 2011

Seven IVS sessions were scheduled for the Nanshan VLBI station in 2011. We participated in all seven of these sessions. The details are listed in Table 2.

Table 2. IVS sessions scheduled for the Nanshan VLBI station in 2011.

Experiment	Date	Remarks (problems)
T2075	03.22	Observed
T2076	05.05	Observed, no problems
APSG28	07.28	Observed, no problems
APSG29	08.17	Observed, no problems
T2077	08.23	Observed, began 22:17 (UT)
T2078	10.11	Observed, no problems
T2079	11.28	Observed, no problems

#### 4. Personnel

The main staff of the Nanshan VLBI station is compiled in Table 3.

Table 3. The main staff of the 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
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Shiqiang Wang	Engineer	Antenna	Wangshq@uao.ac.cn
Hua Zhang	Engineer	Terminal, Time and Freq.	zhangh@uao.ac.cn
Guanghai Li	Engineer	Network, Computer	ligh@uao.ac.cn
Jun Ma	Engineer	Receiver	majun@uao.ac.cn
Chenyu Chen	Engineer	Antenna	chency@uao.ac.cn
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Mingshuai Li	Engineer	Time and Freq.	limingsh@uao.ac.cn