

Nanshan VLBI Station Report for 2005

Abstract

The Nanshan 25-meter radio telescope is operated by Urumqi Observatory. This report describes the activities and status of Nanshan VLBI station as an EVN and IVS network station in 2005.

1. Introduction

The station is located 70 km south of Urumqi, capital city of Xinjiang Uygur Autonomous Region of China. The station is affiliated to Urumqi Observatory of National Astronomical Observatories, CAS. We contribute to EVN and IVS VLBI observations. Urumqi participated domestic VLBI experiments between Urumqi and Shanghai and domestic single dish observation. successfully completed several test e-VLBI observations with Shanghai and Kashima respectively. Urumqi Observatory is willing to continue the collaboration in international e-VLBI activities.

2. Telescope Status

2.1. Antenna

Diameter:25 meter

Antenna type: Cassegrain beam ware-guide

Seat-rack type: Azimuth-pitching ring

Main surface precision: 0.40mm(rms)

Pointing precision:15''(rms)

Rolling range: Azimuth:±270°; Elevation: 5°-88°

Maximum rolling speed: Azimuth: 1.0°/sec; Elevation: 0.5°/sec

The control system of the telescope was upgraded in Sep. 2005. The main surface of the antenna has been adjusted and the precision of main surface is 0.4mm (rms). We also finished painting the whole antenna.

2.2. Receiver

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

Table 1. Specifications of receivers

| Parameters | Freg.range |
|--------------------------------|-------------|
| 1.3cm,LCP,Tsys=190K,DPFU=0.057 | 22100-24000 |
| 3.6cm,RCP,Tsys=110K,DPFU=0.093 | 8100-8900 |
| 6cm,dual,Tsys=22K,DPFU=0.105 | 4700-5110 |
| 13cm,RCP,Tsys=75K,DPFU=0.096 | 2150-2320 |
| 18cm,dual,Tsys=21K,DPFU=0.088 | 1400-1720 |
| 30cm,LCP,Tsys=160K,DPFU=0.06 | 800-1200 |

New S/X band cryogenic receivers were installed in Nov. 2005.

2.3. Recording System

Mark IV, Mark5 and Mark II recording systems are available now at Nanshan VLBI station. The performance of the observing system has been improved over the last year.

New FS computer is in use at Nanshan and the Field System has been upgraded to version 9.7.7 and it works well.

A data sampling station for weather monitoring purpose was installed in September.

The p-cal control system has been updated and the parameters of S/X band receivers are sampled from FS softwares.

2.4. Time and Frequency System

A new time and frequency system was established for Nanshan station. A new Hydrogen Maser MHM2010 has been started using since Oct 2005 and it works well. We also upgraded the GPS time receiver.

3. Nanshan VLBI Observations During 2005

The activities carried out at the Urumqi Nanshan VLBI station during 2005 are participated in 44 VLBI observing sessions with EVN, IVS (include the 8 IVS observing sessions)

4. Personnel

Table 3. The main staffs in Nanshan VLBI Station.

| Staff | Position | Working area | e-mail |
|---------------|-----------------|--------------------------|----------------------|
| Wang Na | Professor | Station chief | na.wang@ms.xjb.ac.cn |
| Aili Yusup | Professor | Chief engineer | aliyu@ms.xjb.ac.cn |
| Sun ZhengWen | Senior engineer | Microwave, Receiver | sunzw@ms.xjb.ac.cn |
| Liu Xiang | VLBI scientist | VLBI friend | liux@ms.xjb.ac.cn |
| Chen Maoheng | Senior engineer | Microwave, Receiver | mzchen@ms.xjb.ac.cn |
| Wang Weixia | Senior engineer | Microwave, Receiver | wangwx@ms.xjb.ac.cn |
| Shao Minghui | Senior engineer | Time and Freq., Terminal | shaomh@ms.xjb.ac.cn |
| Yang Wenjun | Engineer | Terminal | yangwj@ms.xjb.ac.cn |
| Wang Shiqiang | Engineer | Antenna | Wangshq@ms.xjb.ac.cn |
| Zhang Hua | Engineer | Terminal, Time and Freq. | zhangh@ms.xjb.ac.cn |
| Li Guanghui | Engineer | Network, Computer | ligh@ms.xjb.ac.cn |
| Ma Jun | Engineer | Microwave, Receiver | majun@ms.xjb.ac.cn |
| Chen Chenyu | Engineer | Antenna | chency@ms.xjb.ac.cn |

5. Future Plan

A new 1.3-cm dual polarization cryogenic receiver will be built in 2006. A new feed for both 92 cm and 49 cm band is also planned. We will increase to MK4 VC for additional 1-MHz filter in 2006.