

# Shanghai Station Report for 2014

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**Abstract** This report summarizes the observing activities at the Sheshan station (SESHAN25) and the Tianma station (TIANMA65) in 2014. It includes the international VLBI observations for astrometry, geodesy, and astrophysics and domestic observations for satellite tracking. We will also report on the updates and the development of the facilities at the two stations.

## 1 General Information

The Sheshan station (SESHAN25) is located at Sheshan, 30 km west of Shanghai. It is hosted by Shanghai Astronomical Observatory (SHAO), Chinese Academy of Sciences (CAS). A 25-meter radio telescope is in operation at 1.3, 3.6/13, 5, 6, and 18 cm wavelengths. The Sheshan station is a member of the IVS and EVN.

The Tianma station (TIANMA65) is located in the western suburbs of Shanghai, Sheshan town, Songjiang district. It is jointly funded by the Chinese Academy of Sciences (CAS), Shanghai Municipality, and the Chinese Lunar Exploration Program. The telescope construction started in the early 2009, and the majority of the mechanical system was completed in October 2012. On December 2, 2013, the Tianma 65-m telescope passed the acceptance evaluation. The Tianma 65-m radio telescope, one of the largest steerable radio telescopes in the world, is a multifunction facility for astrophysics, geodesy, and astrometry as well

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as space science. By the end of 2014, TIANMA65 was equipped with four cryogenic receiver systems (L, C, S/X, and Ku). It is expected that another three high-frequency cryogenic receiver systems (K, X/Ka, and Q) will be finished in 2015. A CDAS and DBBC2 were installed at the Tianma telescope for VLBI data acquisition.



**Fig. 1** Tianma 65-m radio telescope.

The SESHAN25 and TIANMA65 telescopes take part in international VLBI experiments for astrometry, geodesy, and astrophysics researches including RadioAstron Space VLBI observations. Apart from its international VLBI activities, the telescope spent a large amount of time on the Chinese Lunar Exploration Project, including the testing before the launch of the Chang'E-5T1 satellite and the tracking campaign after the launch.

## **2 VLBI Observations in 2014**

In 2014, the SESHAN25 telescope participated in 16 IVS regular sessions and 11 INT3 Intensive sessions. In addition, there were two Chinese domestic geodetic sessions. SESHAN25 also participated in the three regular EVN sessions in February, June, and October. We did not participate in the session R1645 due to the analog VLBI terminal VSI-C card problem. We missed the session R1657 due to the antenna motor problem. In 2014, TIANMA65 participated in two IVS sessions. The low amplitude in SR6U, XR7U and XR8U/L occasionally happened. In order to track the Chinese Chang'E-5T1 satellite, SESHAN25 or TIANMA65 have observed the Chang'E-5T1 satellite for two days per week.

## **3 Development and Maintenance of the Sheshan Telescope in 2014**

We have upgraded the FS version from 10.04 to 11.10. We have also upgraded the antenna control software to measure the antenna pointing errors with the Gaussian fitting method.

## **4 The Staff of the Shanghai VLBI Station**

Table 1 lists the group members of the Sheshan VLBI station. The staff are involved in the VLBI program at the station with various responsibilities.

## **5 Outlook**

In 2015, the Sheshan radio telescope will take part in thirty-five IVS sessions and three EVN sessions. The Tianma radio telescope will take part in six IVS sessions. The telescopes will also regularly track the Chang'E-5T1 satellite in its lunar orbit.

**Table 1** The staff of the Sheshan VLBI station.

<b>Name</b>	<b>Background</b>	<b>Position and Duty</b>	<b>Contact</b>
Xiaoyu Hong	Astrophysics	Director	xhong@shao.ac.cn
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