

Sheshan VLBI Station Report for 2009

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Abstract

This report summarizes the observing activities at the Sheshan station (SESHAN25) in 2009. It includes the international VLBI observations for astrometry, geodesy, and astrophysics and domestic observations for satellite monitoring. We also report on updates, and development of the facilities at the station.

1. General Information

The Sheshan VLBI station (“SESHAN25”) is hosted by the 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 VLBI station is a member of the IVS, EVN, and APT. The telescope takes part in international VLBI experiments on astrometric, geodetic, and astrophysical research. Together with three other radio telescopes in China, the Sheshan radio telescope participates in the VLBI tracking of spacecraft such as the Chinese Chang’E-1 satellite.

2. VLBI Observations in 2009

In 2009, the Sheshan radio telescope was scheduled for twenty-two IVS experiments, although it failed to participate in four experiments due to an antenna mechanical problem. Some X band observations were subjected to pointing errors, leading to lower sensitivity.

In addition, the Sheshan telescope participated in thirty-five disk-based VLBI observations and twenty-six e-VLBI observations and formatter tests organized by the EVN, nineteen experiments for the Chinese Chang’E-1 lunar satellite, and some DBBC test experiments.

3. Development and Maintenance of Sheshan Telescope in 2009

One azimuth bearing was broken during an observation on September 11th. Then the broken bearing and three other old ones were replaced. The repair work and subsequent pointing tests took 40 days. As a result, the Sheshan station missed four IVS sessions: RD0908, R1399, RD0909, and APSG25.

The S/X receivers and the H-maser ran normally in 2009. The current FS version at the Sheshan station is 9.10.4. The VLBI terminal at the Sheshan station includes an ABBC, a Mark IV formatter, a Mark 5A recorder, and a new Mark 5B recorder. A problem in network transfer for Mark 5B was fixed; since then, recording with Mark 5B has run normally. The OS system of the Mark 5A computer has been upgraded to Debian 2.6.18.dfsg.1-23etch1, and the Mark 5A software version is 2007y222d02h.

The Sheshan radio telescope participated in 512 Mbps e-VLBI observations organized by the EVN. On January 15-16 2009 the Sheshan radio telescope participated in the 33-hour continuous “marathon” e-VLBI observation demonstrated live in the opening ceremony of the International Year of Astronomy 2009 in Paris. On April 3-5 2009, the Sheshan radio telescope participated in e-VLBI observations as a part of the “100 Hours of Astronomy”.

4. The Personnel Changes of Sheshan VLBI Station

Bo Xia will replace Tao An as the VLBI friend as of January 1st 2010.

5. Prospect

A new 6.7 GHz receiver with dual circular polarization will be available starting in spring 2010. It works at room temperature. The LO frequency is 5900 MHz, and the frequency coverage is from 6400 to 6825 MHz.

The Shanghai Astronomical Observatory is building a new 65 m radio telescope at a location about 4 km west of the current 25 m telescope site. It is scheduled to be completed in 2012. The highest frequency is 43 GHz, and the lowest one is 1.6 GHz.