

# **VLBI tracking for Chang'E-1 lunar mission**

The Chang'E-1 VLBI group

- (1) Shanghai Astronomical Observatory, CAS, China,
- (2) Urumqi Observatory, National Astronomical Observatory, CAS, China
- (3) National Astronomical Observatory, CAS, China
- (4) Yunnan Astronomical Observatory, National Astronomical Observatory, CAS, China
- (5) Xian Institute of Surveying and Mapping, China

(xhong@shao.ac.cn / FAX: +86 21 54592232 / Phone: +86 21 54901005

Chinese Space Agency will begin a broad project of exploration of the Moon, called Chang'E Project. The first Chinese lunar orbiter Chang'E-1 will be launched in 2007. An X-band VLBI beacon is being developed and will be installed onboard the lunar orbiter as a radio source for VLBI observations. During the launching and mission periods, the Chinese VLBI Network will be operated together with the S-band Chinese Space Tracking Network to carry out the high-precision navigation of Chang'E-1. To realize this target, besides the two existing radio telescopes located at Sheshan, near Shanghai and Nanshan, near Urumqi, two new radio telescopes, one dish of 50 m in diameter at Miyun, near Beijing and one dish of 40 m in diameter at Kunming, as well as a VLBI data processing center at the Shanghai Astronomical Observatory are being constructed now. In the Chang'E-1 mission, the S/C VLBI tracking will be conducted in three regimes: routine low-precision regime at 2.3 GHz, medium-precision at 2.3 and 8.4 GHz (simultaneous dual-frequency), and high-precision 2.3 and 8.4 dual frequency measurements using a phase-stable up-down coherent radio link. In this paper, we will introduce the latest status of the Chinese VLBI Network, the progress of the preparation of the S/C VLBI tracking, and the VLBI observations of European lunar mission SMART-1.