

Laser Retro-reflector Array designed for the mission of Tiangong2 spacecraft and SLR measurements

Zhi'en Cheng, Pu Li, Kai Tang, Zhongping Zhang, and Haifeng Zhang
Shanghai Astronomical Observatory of CAS, China (cze@shao.ac.cn)

The mission of Tiangong2 is the China's second manned space laboratory for further verifying the space rendezvous and docking technology and a series of space tests. The Laser Retro-reflector Array (LRA) for Satellite Laser Ranging (SLR) is designed to evaluate the precision of orbit determination and the global SLR measurements are performed under the support of ILRS with the coordination of SHAO and CSU and lots of laser data are obtained and used for centimeters-level precise orbit determination. Additionally, Laser Radar Retro-reflector Array (LRRA) is also designed for space rendezvous and docking mission. Because of its large size, the SLR station will receive echoes from the both arrays. The effective reflection area calculation model of LRA relative to ground station is established, and the influence of LRRA on the observation of LRA is also analyzed in this presentation. It makes the guidance for the acquisition of high precision observation data, and the scientific suggestions for the development of the LRRA in future.