

## **Current status in Shanghai SLR station**

Z. B. Wu, J. P. Chen, H. F. Zhang, P. Li, H. R. Deng, Z. P. Zhang

(Shanghai Astronomical Observatory, Chinese Academy of Sciences, 80 Nandan Road, Shanghai 200030, China)

**Introduction:** Since September 2009, Chinese SLR network, including Shanghai SLR station, imported pico-seconds kHz Laser system from PI Company of USA to perform routine SLR measurement and the laser measurement to space debris were successfully performed by using high pulse energy of laser system (1J@10Hz) from Spectrum Physics Company.

For promoting development and application of Chinese-made laser system in the field of high precise laser ranging to space objects, two sets of kHz repetition rate laser system with the pulse width of 20 pico-seconds, 100 pico-seconds and the power of 1W, 8W respectively and one set of 10kHz laser with the power of 5W and the pulse width of 30ps have been adopted to do measurement experiments for satellite laser ranging at Shanghai SLR station and the measurements to HEO satellites in daylight have been performed routinely and the single shot measuring precision and calibration is to center-meters and sub center-meters. For the 8W laser system, we have tried to measure space debris in order to check the measurement precision and characteristics of objects.

In addition the new set of less than 10ns pulse width 60W laser system at the frequency of 200Hz have been developed and used for space debris tracking and some measurement results have been obtained with excellent performance and reliability.

### **References:**

[1] Z. P. Zhang, H. F. Zhang, Z. B. Wu, et. al. (2011) kHz repetition Satellite Laser Ranging system with high precision and measuring results, Chinese Sci Bull, 56(15): 1177–1183

[2] Z. P. Zhang, F. M. Yang, H. F. Zhang, et al. (2012) The use of laser ranging to measure space debris, Research in Astron. Astrophys, 12( 2):212-218

[3] Z. P. Zhang, H. F. Zhang, Z. B. Wu, et. al. (2014) Experiment of Laser Ranging to Space Debris Based on High Power Solid-State Laser System at 200Hz Repetition Rate, Chinese Journal of Lasers (Chinese version), 41:s108005-1-7