

# Laser measurement to space targets by using 1.56m/60cm dual-receiving telescopes with the laser transmitter on the 60cm SLR system

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**Introduction:** The measurement ability of laser ranging system is proportional to the receiving area of telescope and it is very helpful for receiving weak photon signals by using large aperture telescope. For large aperture telescope, the difficulty of technical development and complexity of equipment running and maintenance limit its flexible applications in increasing the ability of laser ranging system. The multi-receiving telescopes technology in laser ranging to space targets with the advantages of flexibility and maintenance is put forward to realize the equivalent receiving ability produced from the one large aperture telescope.

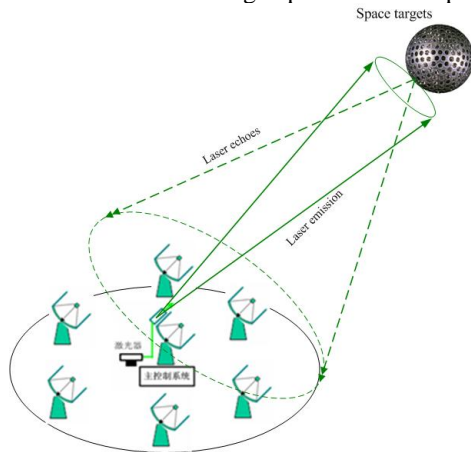


Fig.1 The concepts of multi-receiving telescopes in laser ranging to space targets

The demonstrated experimental measurement system based on the 60cm SLR system (Site ID 7821) and 1.56m astronomical observation telescopes with the distance of about 60m is established to provide the platform for studying on the multi-receiving telescopes technology. The laser ranging experiments to ILRS satellites with the laser transmitter on the 60cm SLR system were successfully performed to verify the technical feasibility for increasing ability of laser echo detections by using dual-receiving telescopes. The statistic of laser returns detected from 1.56m/60cm telescopes can be equivalent to the single telescope with aperture of 1.67m. The multi-receiving telescopes technology will become a novel effective way to improve the detection ability of laser ranging to space targets with characteristics of weak photon signals.

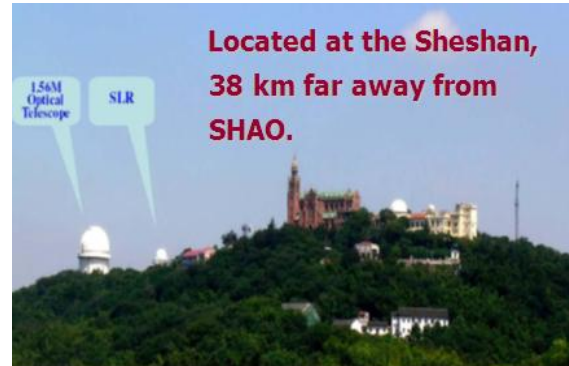


Fig.2 The demonstration of measuring system based on 1.56m/60cm receiving telescopes

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