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Development of High Repetition-rate Laser Ranging System

Korea Astronomy and Space Science Institute (KASI) has been developing two Satellite Laser Ranging (SLR) systems, called ARGO-M and ARGO-F respectively. The ARGO-M development was completed in 2012, which had a separate optical path, 2 kHz repetition rate and Nd:YAG laser with 532 nm wavelength. Its ranging accuracy is millimeter level for satellites with retro-reflector arrays. Many SLR stations have been trying to improve the ranging accuracy for Global Geodetic Observing System (GGOS) requirements. The KASI had upgraded the ARGO-M with high repetition rate, up to 10 kHz by developing new operation software, called HSLR-10. The new ARGO-M will contribute to the accurate spin rate determination of geodetic satellites as well as geodetic research because it has the largest repetition rate in the world. In this study, It is introduce HSLR-10 and GUI. In addition, the experiment results are also given to demonstrate and validate the ranging accuracy performance of the ARGO-M.