

Satellite illumination for pointing and auto-tracking at Grasse station - France Station (ID7845)

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The MeO optical ground station, located in Grasse-France, was designed at the end of 1970's in the framework of lunar laser ranging (LLR). Today, in addition to the LLR program, the station is part of the ILRS network (ID7845) and participates to various laser applications including Satellite Laser Ranging (SLR), Time Transfer by Laser Link (T2L2), high-resolution imagery, debris detection and laser/quantum communication. In order to improve the pointing & autotracking system of the telescope and to test new detectors (with small detection area), we have performed some experiments basing on a high power continuous laser (uplink laser - 30 W) that illuminates some geodesic satellites. The spot of the returning beam is detected by a highspeed camera that enables the auto-tracking of a steering mirror. Therefore, the returning spot is maintained in the center of camera/detectors despite of the pointing error of the telescope and prediction error of satellite orbit.

In the presentation, we will first give a global view of experiment setup with some details on the uplink laser, the auto-tracking system with the steering mirror and camera. Then, we present some preliminary results obtained when we illuminated Ajisai, Stella, Lageos and our prospective applications of this such experiments.