

Use of a night-tracking camera for real time correction of the pointing of the SLR system

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The continuous increase of the SLR targets requires a directly proportional optimization of the station performances in terms of target acquisition and tracking. If the station wants to maximize the number of observations and the number of observed objects, it has to minimize the time needed to acquire the target. Due to the small field of view of the laser system, the time needed to lock on a target depends on the accuracy of the predicted ephemeris of the target. This problem is even more evident when the telescope time is shared among different projects. The Swiss Optical Ground Station and Geodynamics Observatory Zimmerwald owned by the Astronomical Institute of the University of Bern (AIUB) was developing a solution for the active tracking problem taking advantage of the experience acquired by multidisciplinary projects. In this paper, we will show a way to shorten the time needed to lock a SLR target by using a high-resolution CMOS camera. In particular, we will show how this camera, whose main application is in the space debris domain, can be used as night-tracking camera for the real time correction of the pointing of the SLR system. After describing the steps needed for the hardware and software integration of the camera in the SLR system, we will present the different functionalities of the night-tracking camera, the procedure for the acquisition of the measurements, and the resulting improvement in the telescope performance.