



## **Comparing tracking scenarios to LAGEOS and Etalon by simulating realistic SLR observations**

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A tool for simulating realistic Satellite Laser Ranging (SLR) observation scenarios was developed. Analyzing the available observations a profile for each station regarding tracking density, maintenance outage, weather condition on one hand and specific noise behavior for the different targets on the other hand was established. Thus, the simulation is able to reproduce the real and generate realistic, synthetic observation scenarios. Single observations can be added or removed as well as the targets exchanged at specific epochs without affecting the remaining observations.

The operational International Laser Ranging Service (ILRS) standard solution provides an important contribution to the International Terrestrial Reference Frame (ITRF). It contains station and geocenter coordinates, and Earth rotation parameters (ERPs). Today they are based on observations to the LAGEOS and Etalon satellites only. Apart from a few limited-time tracking campaigns and suggested priorities among the targets provided by the ILRS each station has their own tracking scheduling and the number of available normal points (NPs, binned full-rate data) available for each satellite are varying from station to station.

The purpose of this study is to optimize the tracking scenarios on the stations regarding the main parameters of the analysis (station and geocenter coordinates as well as ERPs). Is it helpful to increase the number of NPs to these standard targets (e.g., by tracking less other satellites) or does a reduction of the tracking not harm the solutions (e.g., to generate the opportunity to support also other satellite missions)? Is it beneficial to coordinate the tracking of the stations in one region to focus on one common or better different targets? These and other related questions will be answered by this study.