

Multi-satellite SLR solutions including LARES/LARES-2 SLR data

Linda Geisser, Ulrich Meyer, Daniel Arnold, Adrian Jäggi

Astronomical Institute of the University of Bern, Bern, Switzerland

With the launch of the spherical satellite LARES-2 on July 13, 2022, there is a new target in space which can be used for SLR observations. LARES-2 has a very small area-to-mass ratio and is orbiting the Earth at an altitude of 6000 km, such that the non-gravitational disturbing forces are minimized and therefore the orbit modeling is simplified. In this study, multi-satellite SLR solutions are generated by using spherical geodetic satellites, i.e., LAGEOS-1/2 and LARES/LARES-2. The orbits are determined in 7-day arcs together with station coordinates, range biases, Earth rotation parameters and spherical harmonic coefficients of the Earth's gravity field. The quality of the solutions are validated by comparing the estimated parameters, e.g., the Earth rotation parameters and spherical harmonic coefficients, with external quality metrics and by analysing the decorrelation of the estimated parameters.