



Further improvements in mitigating systematics in geodetic laser ranging

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In the latest official ITRF release, ITRF2014, the scale difference between the VLBI and SLR contributions was estimated to be 1.37 (0.1) ppb. Approximately half of this difference can be accounted for by the presence of systematic errors both in the SLR observations and in their treatment, as evidenced by our previous work on estimation of range errors. In particular, the accuracy of the corrections employed to relate the optical reflection points to the satellites' centres of mass is a critical factor in the SLR error budget. On the basis of evidence pointing to deficiencies in the accuracy of these corrections for some combination of targets and ranging systems, we reviewed and updated the modelling employed for their computation. Taking into account system specific characteristics and including some physical aspects of the detection process, previously only coarsely approximated, we have produced new correction values for the ILRS stations for the relevant geodetic targets. Here we present the background and modelling employed for the new set of corrections, the differences found between the current and updated values, and discuss their impact on the assessment of station-by-station and global SLR systematic errors, with special attention to the question of reference frame scale.