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### **Update of the IfE LLR analysis model and new fit of relativistic parameters**

The modeling of the Earth-Moon system in the Institut für Erdmessung (IfE) LLR analysis tool was updated in several points, e.g., the implementation of the tidal acceleration and the rotation of a two-layered Moon according to the DE430 ephemeris. This results in a better fit of the LLR data with an overall reduced rms of the residuals of the whole data set. For example, the annual averaged weighted 1-way rms around the 1990ies could be reduced by a factor of 2 to below 5 cm and the 1-way rms since 2006 reaches an average of less than 2 cm. The parameter estimation also benefits from the improved modeling. We present a set of LLR-estimated parameters with focus on relativistic quantities like equivalence principle and a temporal variation of the gravitational constant. We also present a new estimated set of long periodic nutation coefficients with periods of 18.6 years, 9.3 years, 1 year and 182.6 days and their comparison with the MHB2000 model.