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Development of software for Lunar Laser Ranging data analysis at TianQin Research Center for Gravitational Physics

Lunar Laser Ranging (LLR) is an important tool for the investigations of the Earth-Moon system. In order to predict normal point data for new LLR stations and analyze observations from currently running LLR stations, a high precision LLR software package is being developed in our institute. In the observation models, state vectors of major celestial bodies (including lunar orbit and libration) are obtained from the JPL's planetary ephemeris DE430; the temporal and spatial coordinates transformation is based on IAU2000 conventions (Soffel et al., 2003); models related with Earth orientation, tide effects, gravitational and atmospheric time delay are computed on the basis of the IERS conventions (2010). The prediction part of the package is finished. Comparison between calculated and observed (1-way) range from Apache Point, Grasse, Matera and MaDonald will be presented.