



Station Solutions from SLR data of CHAMP and GRACE satellites

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Abstract: SLR data were neither used for routinely GPS orbit restitution (e.g. IGS products), nor in the routinely GRACE orbit determination. It is a pity, that in many cases, the SLR data were (are) used only as orbit quality check. The main principle and algorithm of using SLR data of CHAMP and GRACE satellites to estimate station solutions are introduced. Orbit validations for CHAMP and GRACE from 2003 to 2009 are conducted firstly. Then Station solutions are obtained by using the SLR data of these satellites. The accuracy of station coordinate is better than 1cm when combining the SLR data of CHAMP and GRACE satellites with reasonable relative weight and is higher than those of individual satellite. The monthly time series of station solution are also provided. The long-term and the main period variations are obtained by using LS spectral analysis as well as the robust one. There are still some signals in the time series, which cannot be explained clearly. Some suggests are proposed for the further work especially for the improvement of the accuracy of station coordinates.

Keywords: SLR; Relative weight; Orbit validation; Spectral analysis; Time series.

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