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Estimation of Oppolzer terms from ring laser gyroscope data by a modified ETERNA 3.40 package

Wei Tian

TU Dresden, Institut für Planetare Geodäsie, Lohrmann-Observatorium, Dresden, Germany (wei.tian@mailbox.tu-dresden.de)

Oppolzer terms (also called retrograde diurnal polar motion) within the Earth's body-fixed frame for the instantaneous rotation pole have been detected and estimated with ring laser gyroscopes by several researchers. However previous estimations at several main tidal waves have big discrepancies with theoretical values. For example, at the tidal wave O_1, the discrepancy is as large as 0.5 mas (around three times of estimation standard deviation). In this work we would present our estimation of Oppolzer terms by the ETERNA3.40 package which is widely-used Earth tide software and recently modified by authors to analyze ring laser gyroscope data. The analysis strategies adopted in the original ETERNA3.40 are kept for eliminating the sideband effect at main tidal waves. Our result shows that, after removing influences from orientation variation of G-ring's platform and high frequency variations of Earth rotation due to ocean tides, the estimated Oppolzer terms at main tidal waves agree with theoretical values within the estimation standard deviation (around 0.15 mas).