The difference of Earth's equatorial moments of inertia from polar motion and the dynamical ellipticity

S. Englich, P.J. Mendes Cerveira, H. Schuh

Institute of Geodesy and Geophysics, Vienna University of Technology, Vienna, Austria
(sigrid.englich@tuwien.ac.at / Fax: +43 1 58801 12896 / Phone: +43 1 58801 12867)

The estimation of the Earth's tensor of inertia from recent global gravity field solutions provides a serious constraint to the Chandler Wobble characteristics. Almost one century ago, it was already clear that if polar motion estimates are accurate enough, it would be possible to derive the difference of Earth's equatorial moments of inertia assuming the dynamical ellipticity to be known. The task is to estimate the ratio of the semi-major and semi-minor axes of Chandlerian motion. The orientation of this ellipse provides the direction of Earth's smallest moment of inertia w.r.t. a conventional terrestrial reference frame. We investigate the IERS polar motion data for the above-mentioned purpose and compare the consistency of the results with those obtained from global gravity field solutions.