
First-order perturbation in the rotation of the Earth caused by the gravitational moments from the Moon when describing the precision of its orbital motion

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The article presents the analytical theory of a rotary motion (the theory of a precession, nutation and the compelled fluctuations of poles) developed for non-spherical Earth on the basis of the equations of a rotary motion in Anduaye's variables. We constructed perturbation of the first order in rotation of the planet under the influence of the gravitational moments from the Moon in the conditions of its real orbit set by the high-precision theory of EL 421. All calculations are executed in ecliptic system of coordinates of date and presented in the form convenient for the analysis. Tabulation of perturbations for all variables of Anduaye is executed.

Keywords: action-angle variable, Liouville problem, Fourier series, elliptic integral.

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