

ON THE ELLIPSOIDAL DISTRIBUTION OF DENSITY IN THE EARTH'S INTERIOR

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Abstract

Density within the Earth is expressed by means of generalized Fourier series as a function of the coordinates of a point: its distance from the geocenter, colatitude, and longitude. The following data are used to obtain the coefficients of the series: the parameters of the Earth ellipsoid (assumed to be biaxial), the dynamical flattening of the Earth, the Stokes constants, and the density jumps at four surfaces according to seismological data.

The model of the Earth proposed by the authors is composed of five layers, the density in each layer being expressed as a function of the distance from the center of the Earth by a polynomial of fourth degree. To verify the model, periods of the fundamental modes of spherical and torsion oscillations are derived and compared with observations of the free oscillations of the Earth. The maximum difference is within the errors of the observed periods.