



Investigation of the fundamental types of the Earth's core perturbations in the oscillations of the geomagnetic field.

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Earth's magnetic field is continuously evolving in time. Research is carried out in order to describe its characteristics and different types of perturbations which can exist in the Earth's liquid core. The aim of this work is to analyse the geomagnetic ground observatory data and global magnetic field models for the occurrence of magnetohydrodynamic (MHD) waves described in literature travelling at the top of the Earth's liquid core.

Hourly means data from 150 observatories collected from the World Data Center for Geomagnetism (WDC) were used in this work. Geomagnetic components in spherical coordinates: B_r , B_θ , B_Φ were analyzed. Hourly means were averaged to one day means and to one month means; missing values were interpolated by different methods. Fourier analysis, Empirical Mode Decomposition (EMD) method and Spherical Harmonics analysis were applied to divide measured signals into its internal (core origin) and external part and extract oscillations with different periods. Similar analysis was also made for data generated from global magnetic field models for comparison. Also a comparison of occurrence of perturbations in equatorial, polar and mid-latitudes was made.

Spatial analysis of the times associated with peaks within these data was made to find possible travelling oscillations. Possible candidates of MHD waves travelling at the top of the Earth's liquid core will be presented.