

LOW FREQUENCY EM FIELD INTERACTIONS IN GEOSPHERES INCLUDING THE NOOSPHERE

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Within geological data and the theory of magneto-thermo-elasticity and magnetic hydrodynamics we have formulated a mathematical model of the seismo-hydro-EM interaction in the lithosphere-Ocean-atmosphere system supported by measurements of other authors and our theorems about existence and uniqueness of the solution of the initial boundary value problem of the corresponding system of PDEs. The latter is non-classical (let us refer similar systems as ones of the string diffusion type) because of the different physical nature of the interacting fields and therefore different mathematical types of the differential operators coupled in this system. Then we developed the block diagram of a land and space multisensory complex for the tsunami precursors monitoring distributed from the sea floor up to the ionosphere based on this theory. Another string-diffusion system of PDEs was applied by us to explain (from the viewpoint of the magneto-telluric sounding and rational physics) the results of the seismo-EM field experiment of magnetic location of the future seismic epicenter performed by Prof. Yu. A. Kopytenko (IZMIRAN) et al. So, we investigate geophysical fields. But we are influenced by them as well. To illustrate this idea of V.I. Vernadsky and A.L. Chizevsky, the magnetic storms' influence had been observed for a group of healthy students by control of their electroencephalograms (EEG) along with electrocardiograms, respiratory rhythms, arterial blood pressure and other characteristics during a year. According to the EEG investigations during implementation of the proof-reading test on the computer in absence of magnetic storms, the values of the coherence function of time series of the theta-rhythm oscillations ($f = 4 - 7.9$ Hz, $A = 20$ μ V) of electric potentials of the frontal and occipital parts of the head belong to the interval $[0.3, 0.6]$ for nearly all of the students. Let us formulate the *main result*: by implementation of the same test during a magnetic storm, $5 \leq K \leq 6$, or no later 24 hours after its beginning (the geomagnetic data of IZMIRAN were used), the values of the coherence function of all of the students occurred to be decreased up to 0.1 or less including 0. The usual coherence function values were being registered, typically, about 48 hours after the magnetic storm end. Possibly, reaction on magnetic storms of specialists controlling composed modern technological systems should be checked.