Modelling of seismic-electromagnetic Processes in hierarchic Structures, caused by seism-tectonic Activity

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Rock massive can be described by four functions: structure, physical features, content and state. The last feature plays the main role by forecasting the dynamical events which can occur in it. The energy and intensity of the dynamical events depend from the volume of the massive and the space-time changes of the influence on it.
The second feature of the state evolution is: the local volume massive does not immediately respond on the changing of the surrounded it stress state. Therefore it stores the response energy and then extracts it through a high energy dynamical effect. It is very significant to define the time of reaction lagging, in spite of the influence on the massive can be assumed as elastic. The unique model which can explain that effect is a model of the massive with a hierarchic structure. We developed a mathematical algorithm using integral and integral-differential equations for 2-D model for two problems in a frequency domain: diffraction a sound wave and linear polarized transverse wave through a arbitrary hierarchy rank inclusion plunged in an N-layered medium. That algorithm differs from the fractal model approach by a freer selecting of heterogeneities position of each rank. And the second the problem is solved in the dynamical approach. The higher the amount of the hierarchic ranks the more is the degree of nonlinearity of the massive response and the longer can be the time of massive reaction lag of the influence.
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