



## **Defining of the modeling algorithm of seismic field distribution inside the block elastic medium with plastic and anomaly dense inclusions of hierarchic oil saturated structure.**

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Analogies of oil and gas and processes of oil and gas forming and accumulation with the processes of mineralization and formation of ore deposits, which clearly appear their endogenous nature, testify the important role of endogenous factors in the formation of oil and gas accumulations. There is an urgent need to consider not only the generation of hydrocarbons in the system linked with the organic matter, but also in the broader system that include the deposits of fossil fuels and ore deposits. Development of possible methods and approaches should be based on consideration of the power of dynamic processes. To understand and analyze the state of petroleum geology and geophysics at the turn of the century, it is necessary to compare the key geophysical ideas that give a key to studies of hydrocarbon deposits. The processes of development of oil and gas fields are associated with the motion of multiphase multicomponent media that are characterized by non equilibrium and non-linear rheological properties. The real behavior of reservoir systems is determined by the complexity of the rheology of moving fluids and the morphological structure of the porous medium, as well as by the variety of processes of interaction between the liquid and the porous medium. The algorithm developed in [1] is based on Hooke's law [2]. Equations of motion are obtained by equating the elastic forces of the products of masses with accelerations, and the action of the other forces is not assumed. This assumption is completely justified for small deformations and quite often agrees well with the experimental data. However, if vibrations occur in the medium, some of the elastic energy passes into heat due to internal friction. At the present time, the theory of internal friction in solids is developing [3]. There are several indirect methods for determining internal friction that arise in the samples, which are associated with the assumption that the restoring forces are proportional to the amplitude of the oscillation, and the dissipative forces are proportional to the velocity. The present work is devoted to the creation of an algorithm for the propagation of a seismic field in the acoustic approximation in a layer-block elastic medium with a hierarchical plastic inclusion (the case of taking into account internal friction in a viscoelastic inclusion) and an anomalous density inclusion immersed in the oil-saturated medium.

### Reference

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