ON IDEAL AND EFFECTIVE VALUES OF ROCKS ELASTICITY MODULI

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Unlike traditional materials, applied in engineering, both in laboratories and in natural conditions (i.e. in the Earth entrails), rocks manifest various mechanisms of deformation. In accordance with the generally accepted classification and in case a number of strict conditions and theoretical rules are observed, we use either static or dynamic methods in order to determine the values of parameters, which characterise certain physical and mechanical properties of the material under consideration. These parameters are called elasticity moduli, and being determined in the laboratory, they express these parameters ideal values. The elasticity moduli ideal values are permanent for specific materials.In applied studies these moduli are not usually measured. They are calculated according to well-known formulas via other measured parameters. For example, in seismics the velocities of longitudinal and shear waves are determined, and with their help the value of Poisson coefficient is found. However, the results manifest, that, unlike Poisson coefficient ideal values, this specific value is variable. These values are usually called effective. Consequently, rocks at different depths and under different conditions behave not as a material but as constructions made of these material.In the given report we apply non-linear elastic dynamics and propose an approach for determining elasticity moduli of isotropic and anisotropic media proceeding from their effective values. For a number of the Gulf of Mexico rocks we determine ideal and effective values of L. Thomsen coefficients.