

Three-dimensional linearized theory of laminated rocks instability. (Continual theory and model of piecewise-homogeneous medium)

GUZ, A.N. Institute of Mechanics, Kiev, Ukraine.

A systematic presentation of the foundations of three-dimensional linearized theory of equilibrium state stability in laminated rocks is given. Models of the elastic and elasto-plastic bodies are used for modelling of properties of layers. In analysis the three-dimensional linearized theory of deformable bodies stability is used. This theory is constructed by successive linearization of respective non-linear theories. Investigations were carried out within the framework of the continual approach and within the framework of the model of piecewise-homogeneous medium. The strict proof of the applicability of the static method of analysis under the action of some loads is given in cases of elastic and elasto-plastic models. In view of it the following analysis the single classes of problems are realized only with the use of static method.

Results of investigations of the stability of a single layer are presented, when the action of neighbouring layers is modelled by the action of "tracking" or "dead" loads. The solution of the problem of stability of the single layer under omnidirectional compression is presented in the general form (for model of general form), when the boundary surface "tracking" and "dead" loads act on certain parts of the boundary surface.

Results of investigation of stability of packet of layers, consisting of finite number of layers or periodic system of layers are presented. Various forms of stability loss are considered, the analysis of their possible realization is carried out.