

GEO-ENERGETICS OF UKRAINIAN SHIELD

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The analysis and systematization of geodynamic conditions of underground mining of ore deposits in Ukraine is executed. The issue of description of natural condition of rocks in world practice is enclosed. Classification of methods of rock massifs energy condition is composed and ways of development of new hypotheses, theories and methods are described. The entropy method of a research describing processes of redistribution of the potential energy in the undisturbed massif that represented in the form of thermodynamic system is offered. An inspection of the received results on convergence is conducted.

The analysis of methods of determination of rock strength has allowed expanding classification of methods of a research due to introduction of synergetic group. This group includes entropy, thermodynamic and energy methods that allow to investigate processes of power exchange in rock and natural transformations of one types of energy to others. Improvement of the existing entropy method as a part of the thermodynamic theory and creation of new, energetic, have allowed to investigate the phenomenon of zonal structuring of the massif around mine workings and have allowed to establish exact quantity, the sizes and a shape of energy zones and to reveal sinusoidal-and-fading stresses and ring areas of deformation.

Distribution of entropy in the undisturbed massif rocks of the Ukrainian Crystalline Board proceeds in mutually perpendicular directions that corresponding to vertical and horizontal power streams. On sedate dependences in the massif only a part of potential energy which volume is 50 for the horizontal stresses, and 45% for for vertical ones from the difference of external loadings is redistributed. Increasing of potential energy in the massif of rocks of Kryvorizskyi basin at depths up to 3000 m leads to redistribution on sedate dependences for horizontal stresses already 95%, and for vertical ones is 57% from the difference of external pressure.

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