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Unlinear wave processes in the vicinity of tectonic heterogeneities by weak seismic waves passing.

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The tectonic heterogeneities, which occur throughout the mining fields give a serious trouble for mining works because in the vicinity of faults occur rock shocks. According the statistical data of geodynamic events, which had been registered on the mines, about 80% are located near the tectonic heterogeneities. The one reason of mining-tectonic rock shocks is the overlapping of summed stress field of the fault and man-made field over the breaking point of the rock. It is very needed to achieve the control on the stress-deformed state of the rock massif in the area of the dynamical influence of the fault during the process of it outworking. By seismic natural experiments in the Ural and Siberia mines it was obtained, that by passing of the seismic wave of small amplitude through the tectonic heterogeneity, in it vicinity occurs an anomaly oscillation, which lasts more, then the passing wave. The dynamic parameters of that oscillation differ also from that of the passing wave. So for instance it amplitude is larger of the initial signal from 3 to 10 times, the frequency of the maximum of the amplitude is higher on 10-15 values. The weak attenuation character of the oscillations, existence of multiple harmonics and the shape of oscillation process envelope show that it is a self-oscillating process. The space belonging of the anomaly oscillations to the tectonic structures allow us to assume, that they occur linked to the peculiarity of the stress-deformed state of the local places of the rock massif in the vicinity of the tectonic heterogeneities. That is proved by achieved earlier experimental results obtained by the method of pressure relief and acoustic method. More over the distribution of the frequency maximum of the anomaly oscillations along the fault shows the asym-metry of the two sides of the fault deformation. The comparison of the frequency of the anomaly oscillations with the parameters of the stress field on the pickets of seismic natural experiments into 9 mines shows a good correlation relation, which can be used for the elaboration of a control method of the stress-deformed state of the rock massif, which is located in the influence zone of the tectonic heterogeneity. That method will use the analytical relation between the dynamical parameters of the anomaly oscillations and the level of the stress concentration of the local place of the rock massif. For selection of a mathematical model of the oscillation it is needed to know it physical nature. We had analyzed the influence of different conditions of registration and excitation on the dynamical parameters.