

Experimental Study of Dynamic Fracture in Structurally Heterogeneous Materials on the Example of Rocks

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Abstract. The development of micro- and macrocracks in rocks under dynamic influence is considered. The important role of structural features of rocks on this process is noted. Based on ultrasound studies, it is shown that rock samples, as a rule, are heterogeneous and differ in the distribution of longitudinal wave velocity values in certain local regions. The initial heterogeneity determines the spatial development of the microcrack development area under external influence. Using optical microscopy and computer X-ray microtomography, the parameters of microcracks were determined on the example of granite after exposure. Experimental studies using optical, electron and scanning confocal laser microscopy were performed to evaluate the parameters of microcracks in granite. Structural features of rocks affect the nature of the development, trajectory and speed of crack propagation.

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