

Abstract Submitted  
for the SHOCK05 Meeting of  
The American Physical Society

Sorting Category: MS (E)

**Experimental investigation of rock fracture under impact pulse and static loading** YURI PETROV, SVETLANA ATROSHENKO, ALEXEI GRUZDKOV, GEORGY FEDOROVSKY, SERGEI KRIVOSHEEV, ALEXANDER UTKIN, GRIGORY VOLKOV, Research Center of Dynamics of the St.-Petersburg State University — For study of dynamic crack formation, shock loading in microsecond range using magnetic pulse installation was carried out. Testing specimens in the form of plate with the middle through notch was used. The load was applied to the faces of notch. The length of growing crack was established in testing. Spall fracture was investigated under impact applied to the end of rod specimens with determination of threshold fracture amplitudes. Propagation velocities of longitudinal and transverse waves in the mediums were measured using laser interferometer. Initial density of materials was measured. Static testing was conducted for identification of the main characteristics of dynamic and static strength of particular rocks. Static testing was realized using rupture machine under deformation velocity 10 mm/min of rod and beam specimens without notch, and also long plates and beam with notch, under uniaxial tension and three points bending. Investigation of surface and profile fracture was carried out using microscopy. The main parameters for dynamic range were determined using analytical solution of corresponding crack problems of mechanics for plate with notch and for rod subjected to threshold load. The main parameters of this approach are incubation time, static strength and fracture toughness.

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Prefer Oral Session

Prefer Poster Session    Research Center of Dynamics of the St.-Petersburg State University

Date submitted: 23 May 2005

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