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Study of Relaxation of Elastic Precursor in Natural Uranium STANISLAV FINYUSHIN, A.L. MIKHAILOV, A.V. FEDOROV, D.V. NAZAROV, A.V. MEN'SHIKH, V.A. DAVYDOV, T.A. GOVORUNOVA, E.V. FILINOV, RFNC-VNIIEF, 607190, Sarov, Russia — The laser interferometer method was used for research of relaxation of elastic precursor in natural uranium. Samples with thicknesses x=0.5-10 mm were loaded by shock-wave pulse with pressure of ~15 GPa. In this thickness range, amplitude of elastic precursor is attenuated from 4.7 GPa to 1.5 GPa. Obtained experimental data on attenuation of elastic precursor are well extrapolated by dependence sel =3.4x-0.4. In this work, data are obtained for the first time in thickness range from 0.5 to 2 mm. It is shown that the elastic precursor is 10 times stronger attenuated in this range, comparing to that in the thickness range from 2 to 10 mm. It is caused by intensive nucleation of dislocation, by growth of evolution of defect structure of material, and by occurrence of energy dissipation.

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