

Abstract Submitted
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Measurement of sound velocities and shear strength of cerium under shock compression¹ ALEXEI KOVALEV, MIKHAIL ZHERNOKLETOV, VLADIMIR KOMISSAROV, MIKHAIL NOVIKOV, RFNC-VNIIEF TEAM — Sound velocity in shock-compressed cerium was measured in the pressure range of 35÷140GPa by the rarefaction overtake technique with use of the indicator liquids carbogal and tetrachloromethane. The samples were loaded by generators of planar shock waves based on use of powerful HE. Luminescence of the liquid indicators was recorded by optical gauges based on photodiode FD256. In the pressure range of 13÷35GPa, sound velocity was measured in cerium samples by the method of counter release with use of manganin-based piezoresistive gauges. Initial density of cerium samples was 6.75g/cub.cm. Basing on the measured values of longitudinal and volume sound velocities, Poisson's ratio and shear strength of cerium were determined, boundaries of melting at shock adiabat were revealed. Experimental data were compared to calculation results.

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