

Abstract Submitted
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“Perturbation Method For Study of Shear Strength of Materials at Pressures Up To ~ 300 gpa ALEKSANDR LEBEDEV, Russian Federal Nuclear Center-VNIIEF — Study of dependence of material shear strength on pressure is important scientific problem. The “perturbation method” is one of the basic methods allowing to perform these studies. This method is based on the fact that growth of initial perturbations depends on material strength and shapes of initial perturbations at intensive accelerations at interface between two media having different densities. Much data on shear strengths of materials at pressures of several tens GPa was obtained by this method in the planar geometry during X-ray recording of perturbation growth at boundary of plate accelerated by explosion products of condensed HE. To study strength at pressures of several hundred of GPa, the technique is suggested, where a cylindrical loading device is used. Perturbation growth is recorded on internal surface of shell, which compresses gas. Tests were performed for study of growth of artificial initial perturbations on internal surface of copper shell during its deceleration in the process of compression of the gas cavity in cylindrical device of high pressure. Calculated pressures in the shell during intensive deceleration are at the level of about 300GPa. The value of shear stresses in copper reached ~ 25 GPa.

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