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Modeling high-rate straining of cerium in shock waves and explosive experiments ALEXANDER PETROVTSEV, VLADIMIR BYCHENKOV, DENIS VARFOLOMEEV, VLADIMIR DREMOV, VYACHESLAV ELKIN, EVGENII KOZLOV, ELENA MIRONOVA, ANATOLY SAPOZHNIKOV, NATALYA SOKOLOVA, VLADISLAV TARZHANOV, Russian Federal Nuclear Centre - Institute of Technical Physics, FRANK CHERNE, GEORGE GRAY III, MARVIN ZOCHER, Los Alamos National Laboratory — The paper presents numerical results from calculations simulating experiments which were focused on the investigation of stress profiles in high-purity and high-grade cerium. The experiments were taken in recent years at LANL with use of light-gas guns for loading samples and the VISAR technique for recording stress profiles and at RFNC-VNIITF where samples were loaded with the sliding and normal detonation of HE and the registration of stress profiles was done with photo-chronographic optic lever technique. Provided is information on the multiphase equation of state and the elastic-plastic models used in calculations. Calculated and experimental profiles are compared. Specific features and characteristics of high-rate straining of cerium are discussed.

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