

Abstract for an Invited Paper
for the SHOCK11 Meeting of
The American Physical Society

Hydrogen Strongly Coupled Plasma at Megabar Pressures

VLADIMIR FORTOV, JIHT RAS

New experimental results on thermodynamics and electrical conductivity of shock and isoentropically compressed hydrogen and deuterium are presented. Strongly coupled plasmas in which pressures achieved 18 Mbar, Coulomb coupling parameter exceeded 450, electron degeneracy parameter came up to 290 were obtained with semi-spherical explosive-driven generators. Theoretical models for description of thermodynamics of warm dense hydrogen, the experiment and theory comparison for hydrogen strongly non-ideal plasmas under high energy density are presented. Experimental and theoretical problems in studying of warm dense hydrogen are discussed.

Work done in collaboration with R.I. Il'kayev, M.A. Mochalov, M.V. Zhernokletov, A.L. Mikhailov, V.B. Mintsev, I.L. Iosilevskiy, and V.Ya. Ternovoi.