

Abstract Submitted
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Equation of State of Warm Dense Hydrogen at Megabar Pressure Range V.K. GRYAZNOV, Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia, I.L. IOSILEVSKIY, Joint Institute for High Temperatures RAS, Moscow, Russia — Improved model for equation of state of warm dense hydrogen (SAHA-D) is developed in frames of “chemical picture.” Hydrogen is considered as multi-component strongly interacted mixture of atoms, molecules, ions and electrons. Intense short-range repulsion of neutral particles is presented in frames of soft sphere approximation. Parameters of interaction potentials for atoms and molecules are chosen in accordance with non-empirical atom-atom approach. Modified pseudopotential approximation is used for Coulomb corrections. Partial degeneracy of electrons is taken into account also. SAHA-D model has good asymptotics at the low (room temperature) and very high temperature limits. Detailed comparison of our results with all available experiments on the first and secondary shock is presented in the intermediate temperature range. Results of calculations of equation of state and thermodynamic properties in frames of SAHA-D model of isoentropically compressed liquid deuterium as well as comparison with new experimental data are presented and discussed.

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