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Multiphase Equation of State for Iron at High Dynamic Pressures¹ KONSTANTIN V. KHISHCHENKO, JIHT RAS, Moscow, Russia — Equations of state for materials over a wide range of densities and temperatures are needed for hydrodynamic simulations of processes in shock-compressed media. In the present work, a new multiphase equation of state for iron is proposed with taking into account the polymorphic phase transformations, melting, evaporation and ionization. Results of calculations of thermodynamic parameters of the three solid (α , ε and γ) as well as the liquid and gas phases of Fe are compared with available experimental data at high dynamic pressures.

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