PHASE TRANSITIONS IN NON-IDEAL PLASMA WITH CHEMICAL REACTIONS OF IONIZATION AND DISSOCIATION

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The Poisson shock adiabat (isentrope) of deuterium is calculated in the region of the density jump recorded in the experiment [1]. The authors of the experiment associated this jump with a phase transition. A distinctive feature of the computational model is taking into account the collective binding energy of atoms (cohesion) and the excluded volume. The calculation results demonstrate the presence of a phase transition and a density jump on the isentrope. A similar phase transition, the Dissociative Phase Transition (DPT), was previously discovered at calculating the Hugoniot shock adiabat for deuterium [2]. A hypothesis is put forward about the existence of a new class of phase transitions: Dissociative and Plasma phase transitions (DPT and PPT) with the same topology of phase characteristics. This type of phase transition was first considered by G.E. Norman and A.N. Starostin [3].

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