EQUATION OF STATE AND METALLIZATION IN METAL VAPORS AND INERT GASES

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The effect of metallization of dense metal vapors [1], inert and molecular gases (see [2]), discovered experimentally, has been long discussed in the literature [3]. Metallization of vapors shows itself in the growth of conductivity up to a minimum metallic value. An unusual explanation of the effect of metallization in metal vapors was proposed in [4] using the chemical model "3+". The increase in vapor conductivity at compression is due to the manifestation of a new component – jellium. Given the presence of jellium, we named this model the "3+" model. Jellium is constituted by tails of wave functions of bound electrons. In this work, using the "3+" model, we calculated the thermophysical and transport properties of plasma of both metal vapors and dense inert gases. Comparison with the available experimental data and theoretical calculations is made [1, 2]. The comparative analysis of the role of the jellium, intercharge and interatomic interactions in dense plasma of inert gases and metal vapors is made. The proposed simple model of plasma fluid is quite successfully used in the near-critical region of metal vapors, and now for dense plasma of inert gases. Introduction to the model of a new component – jellium, made it possible to understand and solve a number of problems of physics of nonideal plasma.

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