

Phase Transitions and Metastable States in the Initial Stage of Wire Explosion

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A numerical simulation of surface processes at wire explosion, taking into account energy losses due to surface radiation and evaporation, and a numerical simulation of the initial stage of tungsten wire self-heating by a high-power current pulse were carried out. For the latter simulation a wide-range semi-empirical equation of state to account for the effects of melting and evaporation of tungsten at high temperatures was used. The metastable states were included in the process model, and the results of the simulation are in good agreement with experimental data.