EQUATION OF STATE OF WARM DENSE MATTER GENERATED BY HEAVY IONS*

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Physical states of warm dense matter (WDM) resulting from action of intense energy fluxes on condensed media include hot compressed liquid, dense plasmas, liquid-gas region with the critical point and quasi-ideal gas. The available equation-of-state (EOS) information of WDM for most materials is limited by knowledge of the principal shock adiabat and several evaluations of the critical point. The idea to create and to investigate states of WDM through isochoric heating is very promising [1-3]. The possibilities of intense heavy ion beams to generate WDM are discussed. We used in the present analysis a wide-range multi-phase EOS for metals and 3D parallel particles-in-cells gas dynamic code. Discussed are results obtained for SIS18 and SIS 100 heavy ion beams at GSI, Darmstadt.

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