

Non-equilibrium effects on the yield of D3He and DT reaction

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We present an investigation of non-equilibrium effects on the reaction histories of D3He and DT near the shock front using Monte Carlo simulations. Distributions of temperature and density near the shock front are fitted based on our previous work (Front.Phys.11(6).115206), with the parameters given in the recent paper (PhysRevLett.122.035001). Considering the thermal non-equilibrium properties across the shock front, the averaged reactivities are calculated using the bimodal distribution rather than the Maxwell one under thermal equilibrium condition. The results show that the increase of the yields mainly comes from the enhanced ion temperatures, while both the decrease of temperatures and the consumptions of fuels could cause the drop of the yields.

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