FUSION REACTIONS IN DENSE MATTER: EFFECTS OF PLASMA SCREENING

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We analyze fusion reactions in dense matter composed of atomic nuclei of one or two types. The mean field model was applied to calculate plasma screening enhancement factors of nuclear reaction rates. The simple parametrization of enhancement factors was obtained. The mean field potential was extracted from extensive Monte Carlo simulations in one component and binary ionic mixtures. We show a good agreement of our calculations with results of path integral Monte Carlo simulations by Militzer and Pollock [Phys.\ Rev.\ B {\bf 71} (2005), 134303]. The results are illustrated on the example of ^{12}C-^{16}O burning.