

Status of deep subbarrier $^{12}\text{C} + ^{12}\text{C}$ fusion and advancing the Trojan horse method

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In this work, I updated the current status of the carbon–carbon fusion research taking into account that after the latest analysis (Beck et al. in *Eur Phys J A* 56:97, 2020) new important experimental and theoretical results had been published and discussed how to advance new THM measurements to extract the low-energy astrophysical S-factors. The kinematical conditions of two different suggested experiments are analyzed. The preparation for one of them, $^{13}\text{C}(^{12}\text{C}, n)^{24}\text{Mg}^*$, where $^{24}\text{Mg}^*$ is the resonance decaying into $\alpha + ^{20}\text{Ne}$ and $p + ^{23}\text{Na}$ channels, is underway by the group of Prof. G. Rogachev (Cyclotron Institute).

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