

Abstract Submitted
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The $^{13}\text{C}(\alpha, n)^{16}\text{O}$ reaction and the effect of $1/2^+$ threshold level on its astrophysical S -factor¹ FNU SHUBHCHINTAK, Texas AM University-Commerce, Commerce, Texas 75429, A. M. MUKHAMEDZHANOV, Cyclotron Institute, Texas AM University, College Station, Texas 77843, C. A. BERTULANI, Texas AM University-Commerce, Commerce, Texas 75429 — The $^{13}\text{C}(\alpha, n)^{16}\text{O}$ reaction is a neutron generator in asymptotic giant branch stars and is considered as the main source of neutrons for the s -process. However, there are controversies about its S -factor at astrophysical relevant energies (around 140-230 keV) where it is controlled by the $1/2^+$ (6.356 MeV) threshold level. In this context, using R -matrix based formalism of Trojan Horse (TH) mechanism we will present our calculations of astrophysical S -factor to reanalyze the recent TH data using both assumptions that the threshold level is a subthreshold bound state or a resonance state.

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