

Abstract Submitted
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Study of the hindrance effect in sub-barrier fusion reactions PAUL DAVIES, University of Surrey, ANSEL HILLMER, Valparaiso University, ANTONIOS KONTOS, LARRY LAMM, CHI MA, University of Notre Dame, EDWARD MARTIN, University of Surrey, MASAHIRO NOTANI, FRANCESCO RAIOLA, ED STECH, WANPENG TAN, XIAODONG TANG, University of Notre Dame — In recent years, a hindrance model has been proposed to extrapolate heavy-ion fusion cross sections at sub-barrier bombarding energies. Compared to the single- and coupled-channel model, the hindrance model greatly reduces the fusion reaction rates in the stellar matter at temperatures $T \leq (3-10) \times 10^8$ K. To test the hindrance model, we have measured the cross sections for the reaction $^{12}\text{C}(^{13}\text{C},p)^{24}\text{Na}$ in the energy range $E_{c.m.} = 3.08-4.80$ MeV by counting the beta-gamma coincidence from the decay of ^{24}Na which has a half life of 15 hours. Preliminary results will be presented.

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