

THE ROLE OF $^{12}\text{C}(^{12}\text{C},n)$ IN THE ASTROPHYSICAL S-PROCESS

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Monday, April 4, 2011
4:00 P.M. NSH 124

The elements between iron and strontium are largely produced by the weak s-process occurring in massive stars during the late stages of convective core He burning and the convective shell carbon burning with the primary source of neutrons coming from the reaction $^{22}\text{Ne}(\alpha,n)^{25}\text{Mg}$. However, shell carbon burning may produce hot enough temperatures to activate $^{12}\text{C}(^{12}\text{C},n)^{23}\text{Mg}$ as a significant neutron source. Few studies have been done on this reaction, and the extrapolation from experimental data down to the relevant astrophysical energies is uncertain. Recent studies performed at the Nuclear Science Laboratory of Notre Dame aim to improve the existing reaction data using new experimental techniques as well as provide a more reliable extrapolation to the low energies not accessible by experiment. Preliminary results will be presented and the astrophysical implications will be discussed.

Nuclear
Seminar

All interested
persons are
cordially
invited to
attend.