

Abstract Submitted
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Level structure of ^{19}Ne from studies of the $^{17}\text{O}(^3\text{He},n)^{19}\text{Ne}$ Reaction M.J. HORNISH, C.R. BRUNE, S.M. GRIMES, M.H. HADIZADEH, T.N. MASSEY, A.V. VOINOV, J.E. O'DONNELL, A. ADEKOLA, Z. HEINEN, C. MATEL, Ohio University — In order to better understand the incomplete level structure of ^{19}Ne above proton threshold as it pertains to proton-induced reactions on ^{18}F in explosive astrophysical environments, a study of the $^{17}\text{O}(^3\text{He},n)^{19}\text{Ne}$ reaction has been performed at the Edwards Accelerator Laboratory at Ohio University. Utilizing pulsed beams and neutron time-of-flight techniques, this study has been conducted at energies where the compound reaction model is the dominant mechanism. As such, this reaction will in principle populate all excited states, including any heretofore unidentified states. This technique will enable a precise determination of excited energies for individual levels. Furthermore, the experimental differential cross section for individual states can be compared to calculations employing the Hauser-Feshbach statistical model in an attempt to extract information on the spins of the excited states. The observed ^{19}Ne level structure from this reaction will be presented and its astrophysical implications will be discussed.

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