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Properties of 12C Resonances Near the Triple Alpha Threshold
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The structure of 12C is a long-standing problem in nuclear physics. Cluster correlations are known to strongly influence the lowest states, which makes this nucleus a challenge to theory. The three-alpha continuum is low in energy and therefore only two bound states exist while the lowest resonances decay into three alpha-particles. Until recently it was not possible to completely characterize these decays and therefore fully explore these lowest resonances. A complete kinematics study of the 10B(3He,paaa) and 11B(3He,daaa) reactions has been performed to study the multi-particle break-up of 12C resonances above the triple- alpha threshold. The energy and widths of various states above the triple-alpha threshold up to 15 MeV have been determined with greater accuracy and in some cases with discrepancies from literature values. The detection of the individual alpha particles allows us to extract partial alpha widths of the natural parity resonances. The ghost peak of the 8Be ground state was included in the extraction of the partial alpha widths and was found to have a significant effect on the partial alpha widths of states just above the triple-alpha threshold. In this contribution the properties of resonances in 12C will be presented and variations from literature values will be discussed. The partial alpha widths will be presented and compared to theory.

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