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α -stripping reactions with light exotic nuclei: $^{12}\text{C}(^7\text{Be}, ^3\text{He})^{16}\text{O}$
H. AMRO, F.D. BECCHETTI, H. JIANG, H. GRIFFIN, Y. CHEN, University of Michigan, J.J. KOLATA, B. SKORODUMOV, University of Notre Dame, J.D. HINNEFELD, Indiana University South Bend, G. PEASLEE, Hope College — Considerable experimental and theoretical efforts have been devoted to examine the importance of α -particle clustering in p -shell and sd -shell nuclei which is essential for the analysis of the helium- and silicon-burning processes in nuclear astrophysics. α -stripping reactions such as $(^6\text{Li}, d)$ and $(^7\text{Li}, t)$ were used to probe the α structure of ^{16}O . These studies shown that the $(^7\text{Li}, t)$ reaction is significantly more selective than $(^6\text{Li}, d)$ reaction. New reaction, $(^7\text{Be}, ^3\text{He})$ has been studied at $E(^7\text{Be})=34$ MeV using the University of Michigan-University of Notre Dame radioactive nuclear beam facility. Angular distributions have been measured for several states in ^{16}O . At this energy, this reaction exhibits a high selectivity for populating α -cluster states in ^{16}O . Furthermore, ^3He -stripping reaction $(^7\text{Be}, \alpha)$ populating several states in ^{15}O , never been reported before for $(^7\text{Li}, t)$ or $(^6\text{Li}, d)$ reactions, was observed in our data. Experimental and theoretical analysis of this data will be presented.

W. Tan
University of Notre Dame

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