

Abstract Submitted
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Search for novel α -cluster structure in light unstable nuclei TAN
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BRADT, L. CARPENTER, W. MITTIG, Michigan State University, F. D. BEC-
CHETTI, University of Michigan — The formation of α -cluster structure in nuclei
is an example of an emergent ordering that appears under certain conditions. It is
still an open question of what the exact conditions are for α cluster-formation. In
order understand these conditions, we have a program to search for α -cluster states
in light unstable nuclei. To access these unstable nuclei we use in-flight radioactive
beams that are produced with TwinSol, a pair of superconducting solenoids. The
Prototype Active-Target Time-Projection Chamber was used to measure differential
cross sections with high precision. Recent experiments for confirming a novel type
of cluster structure, the linear-chain structure, in ^{14}C and the search for cluster
structure in ^{14}O will be presented. The presence or absence of cluster structures in
 ^{14}C and ^{14}O will help elucidate the role of extra nucleons on the formation of cluster
structures.

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