Abstract Submitted
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Exploring clustering in alpha-conjugate nuclei using the thick target inverse kinematic technique for multiple alpha emission[1] M. BARBUI, K. HAGEL, J. GAUTHIER, S. WUENSCHEL, V.Z. GOLDBERG, H. ZHENG, G. GIULIANI, G. RAPISARDA, E-J. KIM, X. LIU, J.B. NATOWITZ, Cyclotron Institute, Texas A&M University, R.T. DESOUZA, S. HUDAN, Indiana University, Bloomington, D. FANG, Shanghai Institute of Applied Physics, China — Searching for alpha cluster states analogous to the ^{12}C Hoyle state in heavier alpha-conjugate nuclei can provide tests of the existence of alpha condensates in nuclear matter. Such states are predicted for ^{16}O, ^{20}Ne, ^{24}Mg, etc. at excitation energies slightly above the decay threshold. The Thick Target Inverse Kinematics (TTIK) technique can be successfully used to study the breakup of excited self-conjugate nuclei into many alpha particles. The reaction ^{20}Ne+α at 11 and 13 AMeV was studied at Cyclotron Institute at Texas A&M University. Here the TTIK method was used to study both single α-particle emission and multiple α-particle decays. Due to the limited statistics, only events with alpha multiplicity up to three were analyzed. The analysis of the three α-particle emission data allowed the identification of the Hoyle state and other ^{12}C excited states decaying into three alpha particles. The results will be shown and compared with other data available in the literature. Another experiment is planned in August 2015 to study the system ^{28}Si +α at 15 AMeV. Preliminary results will be shown.

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