

Abstract Submitted
for the DNP11 Meeting of
The American Physical Society

Low Density Matter and Bose Einstein Condensates in Nuclei

KATARZYNA SCHMIDT, Cyclotron Institute, Texas A&M University — The ability to isolate low density matter in near Fermi Energy collisions and the high degree of alpha clustering at such low densities suggest that we search for evidence of Bose Condensates which are predicted to occur in the density and temperature range which we are exploring [1-3]. A natural way to pursue this question experimentally appears to be to apply our techniques of low density gas investigation to collisions of “alpha-conjugate” nuclei expected to have significant initial alpha cluster character. Such nuclei might show a more natural predilection to evolve into a Bose Condensate. We have initiated a search for evidence of Bose Condensates using the NIMROD array. Our first experiments, carried out at the end of 2008 employed 10, 25, 35 MeV/u beams of ^{40}Ca and ^{28}Si incident on ^{40}Ca , ^{28}Si , ^{12}C and ^{180}Ta targets. The data are currently being analyzed. It is our expectation that a Bose Condensate would manifest itself as an assemblage of alpha conjugate products with particular kinematic correlations. References: [1] Y. Funaki et al., Phys. Rev. C 80, 064326 (2009). [2] G. Roepke et al., Phys. Rev. Lett. 80, 3177(1998). [3] T. Sogo et al., Phys. Rev. C 81, 064310 (2010).

Joe Natowitz
Cyclotron Institute, Texas A&M University

Date submitted: 29 Jun 2011

Electronic form version 1.4