

Abstract Submitted  
for the DNP07 Meeting of  
The American Physical Society

**Structure of  $^{21}\text{Mg}$  excited states studied in single neutron knockout**<sup>1</sup> C. AA. DIGET, P. ADRICH, D. BAZIN, M.D. BOWEN, B.A. BROWN, C.M. CAMPBELL, J.M. COOK, A. GADE, T. GLASMACHER, S. MCDANIEL, A. OBERTELLI, K. SIWEK, J.R. TERRY, D. WEISSHAAR, National Superconducting Cyclotron Laboratory, Michigan State University, Michigan, K. HOSIER, D. MCGLINCHERY, L.A. RILEY, Department of Physics and Astronomy, Ursinus College, Pennsylvania — Previously, the  $^{21}\text{Mg}$  excited-state properties have been studied using the three-neutron transfer reaction  $^{24}\text{Mg}(^3\text{He}, ^6\text{He})^{21}\text{Mg}$  directed by comparison to the  $^{21}\text{F}$  mirror nucleus. When comparing the experimental results to USD shell-model calculations, however, significant discrepancies are found. To resolve these discrepancies, we investigated the nucleus in a one-neutron knockout reaction  $^9\text{Be}(^{22}\text{Mg}, ^{21}\text{Mg})\text{X}$  and studied the subsequent  $\gamma$  decay using in-beam  $\gamma$ -ray spectroscopy. From the  $\gamma$ -decay measurement, energies of the excited states were determined. Furthermore, properties of the states were identified through the decay branching ratios to lower lying states, the spectroscopic factors for the  $^{22}\text{Mg}$  ground state with respect to the individual  $^{21}\text{Mg}$  states, and the longitudinal momentum distribution of the residual nucleus which is sensitive to the orbital angular momentum of the knocked-out neutron.

<sup>1</sup>Supported by NSF grants: PHY-0606007 and PHY-0555366.

Christian Aa. Diget  
National Superconducting Cyclotron Laboratory, Michigan State University, Michigan

Date submitted: 11 Jul 2007

Electronic form version 1.4