Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

**One Proton Knockout from a Relativistic $^{45}$Cl Ion Beam**[1] K.E. HOSIER, T.R. BAUGHER, L.A. RILEY, Ursinus College, P.D. COTTLE, K.W. KEMPER, Florida State University, P. ADRICH, D. BAZIN, J.M. COOK, C.A. DIGET, A. GADE, D.A. GARLAND, T. GLASMACHER, A. RATKIEWICZ, K.P. SIWEK, D. WEISSHARR, National Superconducting Cyclotron Laboratory, Michigan State University — The single particle structure and behavior of $^{44}$S was analyzed through one-proton knockout conducted at the National Superconducting Cyclotron Laboratory at Michigan State University. A fast beam of $^{44}$S fragments was produced from the one-proton knockout reaction $^{9}$Be($^{45}$Cl, $^{44}$S)X. The excited $^{44}$S particles emitted gamma rays that were collected by the Segmented Germanium Array (SeGA). The measured gamma-ray spectrum of $^{44}$S was fitted with GEANT simulations of the gamma-ray response of SeGA in order to extract gamma-ray intensities. A proposal for the level scheme of $^{44}$S will be presented. Knockout cross sections were measured and the momentum distributions of the recoiling $^{44}$S nuclei were analyzed to determine the orbital angular momentum of the proton knocked out.

[1]This work was supported by the National Science Foundation under grant nos. PHY-0606007, PHY-0355129, and PHY-0653323.

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Date submitted: 01 Aug 2007 Electronic form version 1.4