Abstract Submitted
for the APR10 Meeting of
The American Physical Society

Spin assignments to excited states in ^{22}Na through a ^{24}Mg(p,^{3}He)^{22}Na reaction measurement K.Y. CHAE, ORNL, UTK, D.W. BARDAYAN, J.C. BLACKMON, J.F. LIANG, C.D. NESARAJA, M.S. SMITH, ORNL, B.H. MOAZEN, K.L. JONES, S.T. PITTMAN, UTK, K.A. CHIPPS, CO School of Mines, R. HATARIK, P.D. O'MALLEY, S.D. PAIN, Rutgers, R.L. KOZUB, TTU, C. MATEI, ORAU — The ^{21}Ne(p,γ)^{22}Na reaction is part of the NeNa cycle, which is important for the nucleosynthesis of Ne and Na isotopes in stellar explosions such as novae. This reaction also influences the production of ^{22}Na which γ ray astronomers are searching for with the INTEGRAL satellite to help diagnose the nova mechanism. This reaction proceeds through levels in ^{22}Na above the proton threshold at 6.739 MeV. Despite numerous previous studies, the spins and parities are not well known for many levels that may dominate the rate. We measured the ^{24}Mg(p,^{3}He)^{22}Na reaction using 41 and 41.5 MeV proton beams and a 500 μg/cm^{2} ^{24}Mg target at the Holifield Radioactive Ion Beam Facility to better constrain the spins of important levels. Recoiling ^{3}He particles were detected by a segmented silicon detector array at 16 angles simultaneously. By comparing the angular distributions of ^{22}Na levels and DWBA calculations, we are able to constrain the spins and parities of astrophysically important ^{21}Ne(p,γ)^{22}Na resonances. Experimental details and a status report on the analysis will be presented. * This work was supported in part by the US DOE and the NSF.

K.Y. Chae
ORNL, UTK

Date submitted: 14 Oct 2009 Electronic form version 1.4