Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Study of resonances in ^{23}Mg(p,γ)^{24}Al via neutron transfer to analog states in ^{24}Na GREGORY CHRISTIAN, EAMES BENNETT, SHUYA OTA, Texas AM University, WILTON CATFORD, GAVIN LOTAY, ADRIEN MATTA, RYAN WILKENSON, University of Surrey — According to sensitivity studies, the ^{23}Mg$(p,\gamma)^{24}$Al reaction has a significant influence on the production of the radionuclides ^{22}Na and ^{26g}Al in oxygen-neon novae. At nova temperatures, this reaction is thought to be dominated by a single resonance at $E_r \sim 480$ keV, whose strength has previously been measured using a radioactive ^{23}Mg beam and recoil mass spectrometer. To further constrain the rate of this reaction, we have undertaken a spectroscopic study of the mirror states of ^{23}Mg$(p,\gamma)^{24}$Al resonances, using the single-neutron transfer reaction ^{23}Na$(d,p)^{24}$Na in inverse kinematics. The experiment utilized the TIARA silicon detector array coupled to four germanium clovers and the MDM magnetic spectrometer at the Texas AM University Cyclotron Institute, serving as the commissioning experiment for the "TIARA for Texas" (T40) campaign at Texas AM. In this talk, I will give an overview of the experimental setup; present preliminary results from the commissioning experiment; and discuss future plans for the T40 collaboration.

Gregory Christian
Texas A
M University

Date submitted: 01 Jul 2016 Electronic form version 1.4