Abstract Submitted
for the DNP12 Meeting of
The American Physical Society

^{2}6Al Beam Production and its Application to Nuclear Astrophysics[1] BRAD RICHARD[2], Cyclotron Institute, Texas A&M University (REU Student from Arkansas Tech University) — Presumably produced during the supernova stage of stellar evolution, ^{26}Al offers unique opportunities to better understand the processes of nucleosynthesis occurring in pre-SN phases of stellar evolution and within the Galactic disk. When decaying to ^{26}Mg, ^{26}Al emits a unique 1.8MeV gamma ray, detectable by satellite telescopes. The production and destruction pathways of ^{26}Al is a key portion of understanding the on-going stellar nucleosynthesis. In order to measure the cross-section of ^{26}Al(n, p) ^{26}Mg at the astrophysical relevant energies, an indirect method, called the Trojan Horse Method(THM), is utilized. The THM allows the study of neutron induced reactions at astrophysical energies via the d break-up. This method requires the three-body cross section for the ^{26}Al(d, p ^{26}Mg)H reaction to be measured at a beam of 60 MeV. This requires that the ^{26}Al secondary beam is produced by the MARS facility at Cyclotron institute of Texas A&M University from a primary ^{26}Mg beam (E≈16MeV/u) impinging on a H_2 target. ^{26}Al beam was then degraded to 2.25MeV/u energy by means of a Beryllium foil. The obtained results will be shown and discussed in details together with the features of the obtained intense and pure beam.

[1]Funded by DOE and NSF-REU Program
[2]DR. ROBERT TRIBBLE, DR. LIVIUS TRACHE, DR. GIANLUCA PIZZONE, DR. BRIAN ROEDER, Cyclotron Institute, Texas A&M University

Brad Richard
Cyclotron Institute, Texas A&M University
(REU Student from Arkansas Tech University)

Date submitted: 17 Jul 2012 Electronic form version 1.4