

Abstract Submitted
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Beta Decay Study of Neutron-rich Magnesium¹ JOHN ASH, MUSTAFA RAJABALI, Tennessee Tech University, GRIFFIN COLLABORATION — Within the “island of inversion” around the $N = 20$ shell gap, isotopes of magnesium, and aluminum deviate from the expected closed-shell structure. Particles promoted across the $N = 20$ shell gap result in a lower energy deformed ground state configuration rather than the expected spherical configuration. An experiment was conducted at TRIUMF laboratory in the summer of 2015 to study the decay of “island of inversion” isotopes $^{33,34,35}\text{Mg}$ and the structure of the respective daughter nuclei. The isotopes of interest were produced by a proton beam from TRIUMF’s 500 MeV cyclotron impacting on a UC_x target. The magnesium decays populated states along the decay chain in Al, Si, P, and S isotopes. The new GRIFFIN spectrometer in the ISAC-I facility was used to detect the gamma rays. Two sets of scintillators, one for detecting the beta particles (SCEPTAR) and the other for detecting beta-delayed neutrons (DESCANT), were also used in conjunction with GRIFFIN. The GRIFFIN data were energy calibrated and partially analyzed for this project. New algorithms were developed for the analysis. Preliminary results for new transitions detected in ^{34}Mg as well as the half lives obtained will be presented in their current form.

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