Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

β-decay of ^{33}-^{35}Mg near the island of inversion[1] MUSTAFA RAJABALI, TRIUMF, Vancouver BC, Canada, FOR THE 8PI AND EXPERIMENT S1367 COLLABORATION — $^{31-35}$Mg nuclei lie in or around the island of inversion near the $N = 20$ shell closure. These nuclei exhibit a peculiar behavior with their ground states (gs) dominated by deformed configurations. The daughter nuclei $^{31-35}$Al are suggested to have mixed gs configurations of normal and intruder type and thus serve as a transition from intruder dominated Mg isotopes to the normal gs configuration in Si isotopes. An experiment was performed in the ISAC-I facility at TRIUMF with the goal of populating states in $^{33-35}$Al via the beta decay of $^{33-35}$Mg. 500MeV protons on a UC_x target with laser-ionization produced pure beams of Mg ions, which were then implanted on a moving Mylar tape at the center of the 8π facility. Surrounding the implantation point was a set of 11 plastic scintillators used for beta tagging and 20 Compton-suppressed HPGe detectors for gamma-spectroscopy. First results from this experiment will be presented. The level schemes produced for states in ^{33,34}Al will be compared to shell model calculations to understand the influence of intruder states in the neutron-rich $^{33-35}$Al isotopes. Additionally, disagreements between previous experimental results of ^{33}Mg and ^{33}Al will be discussed.

[1]This work was supported by Natural Sciences and Engineering Research Council of Canada.

Mustafa Rajabali
TRIUMF, Vancouver BC, Canada

Date submitted: 30 Jun 2014 Electronic form version 1.4