Abstract Submitted
for the SES20 Meeting of
The American Physical Society

Beta-Decay of 29F: The Southern Shore of The Island of Inversion

JESSE FARR, University of Tennessee — The island of inversion in regards to nuclear physics refers to exotic neutron-rich nuclei that do not follow a standard configuration in the nuclear shell model. To explore this region, the 29F experiment will run in October 2020 at NSCL in Michigan State University. This experiment studies an isotope of fluorine, 29F, in a fragmentation nuclear reaction by implanting it in a crystal detector to measure its decay. By analyzing the decay of this neutron-rich isotope, it will lead to a better understanding of its decay strength, ground state wave function, and the internal structure of 29F and other exotic nuclei near the island of inversion. The VANDLE array alongside a YSO scintillator and three clover detectors will analyze the ions for each individual event to map the decay. The clovers are fitted with thin beta-veto (Betos) plastics in order to maximize efficiency; we determined 1 mm offered the best compromise between high beta response and small gamma background. In this presentation we will show the simulations and evaluation data used to define the beta gamma response.

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Date submitted: 12 Oct 2020 Electronic form version 1.4