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Characterizing a Tape Station and β Detector For Radioactive Isotope Beam Experiments ANTONIUS TORODE, MALLORY SMITH, FARHEEN NAQVI, Michigan State University, EDWARD ZGANJAR, Louisiana State University, PAUL DEYOUNG, Hope College, ALEXANDER DOMBOS, CALEY HARRIS, ARTEMIS SPYROU, Michigan State University — In order to better understand the nucleosynthesis of heavy elements, advanced techniques are needed to study decays of neutron-rich nuclei and to constrain astrophysical models. In conjunction with the Summing NaI(Tl) detector (SuN) at the NSCL, a tape station is being developed to optimize these measurements. A radioactive isotope beam will be implanted directly onto metallic tape at the center of SuN. The primary ions will β-decay toward stability, however radiation from the daughter nuclei presents a significant source of contamination. The tape rotates so that the implantation point moves into a shielded box outside of SuN to remove the contamination after a certain time. The timing depends on the half-life of the primary and daughter ions so a simulation was developed to determine effective timing parameters to use in each experiment. A new plastic scintillator will be used in conjunction with the tape to detect β particles. Light from the plastic will be collected with wavelength shifting fibers that will be coupled to photomultiplier tubes outside of SuN. The status of the tape station, including the simulation and characterizing of the fiber detector will be discussed.

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