Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

The NuDot Calibration System JESUS HERRERA, Massachusetts Institute of Technology, NUDOT COLLABORATION — To reach greater sensitivity, the search for neutrinoless double beta decay will require new techniques for rejecting background events. NuDot seeks to answer these problems by demonstrating Cherenkov/Scintillation separation in betas with energies of 1–2 MeV. This separation will be used to distinguish between single electron scatter events and double beta decay events, and provides ground to perform direction reconstruction of such events. Demonstrating the direction reconstruction of beta events in NuDot requires a calibration system capable of performing multi–directional movements independent of each other. This calibration system must be capable of controlling the height, azimuthal angle, and inclination angle of a Sr90 source and collimator. Utilizing three integrated stepper motors, independent motion can be achieved. With this setup, we can program such motors to point at any position on the sphere from any point along the sphere radius, and relay their exact positions to us. Given this capability, we can test our direction reconstruction and verify that the values from reconstruction match the position and orientation of the collimator on the calibration system.

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Date submitted: 24 Jul 2019 Electronic form version 1.4