Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Looking for BSM Physics in Calcium-45 Beta Decay NOAH BIRGE, University of Tennessee, Knoxville — The Standard Model (SM) is one of the most complete theories encapsulating fundamental particle interactions. Despite its far-ranging success, neutrino flavor oscillations, the observed baryon asymmetry, the dark matter puzzle, and complete absence of gravity from the theory makes it clear that there must exist interactions and particles beyond the standard model (BSM). A measurement of the Fierz interference term in beta decay is one such candidate to test BSM physics. A nonzero Fierz term would indicate the presence of new interactions which manifest at low energy as effective scalar and tensor interactions. The strength of the coupling can be inferred from a distortion of the measured beta decay electron energy spectrum. A set of beta spectrum measurements for ^{45}Ca was completed at the Los Alamos Neutron Science Center in 2017. I will present details of the analysis along with preliminary results. The results will entail a comparison of an extraction of the Fierz term via single-pixel and multi-pixel spectra, and a brief discussion of the dominant systematic uncertainties present.

Noah Birge
University of Tennessee, Knoxville

Date submitted: 01 Jul 2020 Electronic form version 1.4