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Calibration and Characterization of the UNCB and Nab Detectors[1] BRYAN ZECK, Los Alamos Natl Lab, UCNB COLLABORATION, NAB COLLABORATION — The UCNB and Nab experiments are designed to produce precision measurements of the free neutron decay angular correlations B, a, and b. Measurements of B and a require a coincident detection of the proton and electron produced in neutron decay, while for b, which manifests as a subtle shift in the electron energy spectrum, energy resolution better than 3 keV is desired and excellent fidelity for energy reconstruction is required, including characterization of non-linearity to the 10^{-4} level. To this end, a thick segmented silicon detector with a 100 nm dead layer and a 100 cm active area has been extensively characterized at LANL. The thin dead layer allows protons accelerated to 30 keV to deposit energy above threshold in the active volume of the detector, and the paired amplifer chain, developed at LANL, has a risetime of approximately 40 ns. Comparison of simulation to experiment reveals a detector resolution better than $\sigma = 2.5$ keV. A complete characterization of the detector will be presented.

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