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(CEU) Simulating Inside Detector Physics for the Nab Experiment[1] TOM SHELTON, University of Kentucky, LEAH BROUSSARD, Oak Ridge National Lab, NAB COLLABORATION COLLABORATION — The Nab experiment will measure the electron-neutrino correlation coefficient and the Fierz interference term in unpolarized free neutron beta decay with high precision allowing the probing of the standard model and the weak interaction. To meet these precision goals, uncertainty in the average proton time-of-flight must be within 0.3 ns. To achieve this precision, we mush account for the systematic bias created from deposition depth of the particles in the silicon detector due to drift times of quasi-particles resulting in differing charge collection timings. Simulation of the inner detector physics is critical in understanding the significance of this consequence. By characterizing data sets from CASINO and integrating these into custom charge propagation code, we were able to construct the resultant waveforms and determine the timing offset. We will present the process of said simulations along with analysis of this effect.

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