

Abstract Submitted  
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**Pulse Shape Discrimination for the Nab Experiment<sup>1</sup>** DAVID MATHEWS, University of Kentucky, LEAH BROUSSARD, Oak Ridge National Laboratory, NAB COLLABORATION — The Nab neutron beta decay correlation experiment will measure the parameter  $a$ , the electron-neutrino correlation coefficient, and  $b$ , the Fierz interference term.  $a$  can be directly mapped to the unitarity of the CKM matrix while  $b$  places limits on the presence of new physics via scalar or tensor couplings in the weak interaction. These coefficients will be determined through measurements of coincident protons and electrons with a pair of pixelated silicon detectors. The signals created by the incident particles vary in shape depending on multiple parameters such as energy and hit location. To reach the precision goals of the experiment, the mean timing bias must be  $\leq 1$  ns with an energy resolution better than 3 keV. A new signal analysis methodology has been developed that utilizes Nvidia GPUs to fit template waveform shapes. This technique is capable of pulse shape discrimination in real-time and can be used to address sources of bias originating from variations in charge deposition.

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