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Optimization of a Scintillator for the Measurement of Positrons from Trapped, Polarized <sup>37</sup>K ERIN FRANCE, Cameron University, DAN MEL-CONIAN, Texas A&M University — Precision beta decay experiments can be used to test the Standard Model via their value of correlation parameters. The TRINAT collaboration is performing such an experiment using a source of polarized <sup>37</sup>K from a magneto optical trap. The momentum of an emitted positron will be detected using a Silicon strip detector backed by a plastic scintillator. The goal of my research was to optimize the readout of the scintillator by testing different experimental setups. The front face and sides of the scintillator and light guide were wrapped with various reflective materials to find which maximized the light output. We found that one layer of Teflon tape on the front face with a loose wrapping of 3M-ESR (Enhanced Spectral Reflector) on the sides was optimal. We then tested the position dependence of this detector by moving a collimated source of betas across the front face, showing only a  $(5.9 \pm 0.5)\%$  reduction in light collection at the edge compared to the center. The product of this work will be used in the upcoming TRINAT experiment measuring the beta asymmetry of  $^{37}$ K.

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