

Abstract Submitted
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The K0TO Experiment: Undergraduate Research in High Energy Particle Physics MELISSA HUTCHESON, Agnes Scott College, K0TO EXPERIMENT COLLABORATION — The K0TO Experiment aims to discover and measure the rare decay mode of the neutral kaon, $K_L \rightarrow \pi_0 \nu \bar{\nu}$. This decay is a flavor changing neutral current process which directly violates CP symmetry and proceeds through second order weak interactions. The Standard Model predicts the branching ratio to be 2.8×10^{-11} . The goals of the experiment are to first observe the decay and then measure at least 100 events to determine the branching ratio to a higher accuracy (on the order of 10^{-12}) which will either establish more precise limits for the Standard Model or reveal evidence of new physics. An important component of the experiment is the Data Acquisition System (DAQ System) which collects data at a rate of about 1 Terabyte per second. In order to process the data a series of trigger cuts are in place to selectively record events of interested and discard unwanted events. The high rate signals from the detector are shaped and converted from analog to digital by an ADC board. A study was conducted in order to determine the temperature dependence of the ADC pedestal values on which the accuracy of the experimental data relies heavily.

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