

Abstract Submitted  
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**Analysis of Alpha Background from the Sudbury Neutrino Observatory Using Wavelet Analysis** JARRETT MOON, New Mexico State University — The Sudbury Neutrino Observatory (SNO) was a solar neutrino detector that differed from previous detectors in that it was equally sensitive to all flavors of neutrinos, which allowed SNO to obtain evidence for the oscillation of solar neutrinos. A neutrino incident on a deuteron in the heavy water used in the detector could break apart the deuteron producing a neutron. The neutron was detected by an array of proportional counters filled with  $^3\text{He}$ . The voltage vs. time, referred to as a waveform, was recorded from each proportional counter. These proportional counters were sensitive to both neutrons and alpha particles. Any alphas detected were background due to the presence of radioisotopes in the detectors. Therefore, in order to reduce the number of alpha events contributing to this background it was necessary to be able to distinguish between neutron and alpha events. Since neutrons and alphas interact differently in the detector some differences were expected in their waveforms. I attempted to eliminate confusion between neutrons and alphas by establishing a cut between them. This was done by denoising the waveforms using a stationary wavelet transform and then comparing the integrated waveforms. I will present the results of this method of distinguishing waveforms of neutrons and alphas in SNO and compare it with previous methods used.

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