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Measurements of photon scattering lengths in scintillator and a test of the linearity of light yield as a function of electron energy[1]
ALEXANDRA HUSS, Hamilton College — The SNO+ experiment in Sudbury, Canada will utilize approximately 800 tons of liquid scintillator in an attempt to detect neutrinoless double beta decay and measure solar neutrinos and geoneutrinos. The type of particle that interacted with the scintillator yields information about the emitted time spectrum of photons. The ability to detect this time dependency may depend on the scattering length of the photon because a photon's path to a light detector is less predictable if its scattering length is short compared to the distance it traveled before detection. In order to determine the energy of an interacting particle, it is also necessary to determine the relationship between light yield and energy. This relationship is tested by measuring the light output of electrons at very low light intensities. It is found that there is a change in linearity for electron energies at 0.4MeV. I will discuss the measurements made to test the linearity of light yield versus electron energy and measurements made to determine the scattering length of photons in scintillator samples.

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