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SNO+ Calibration Systems (student talk)

Thursday, 15 February 2018 20:00 (15 minutes)

The SNO+ experiment is a versatile multipurpose neutrino detector situated at SNOLAB. Though concentrated on the search for neutrinoless double beta decay in ^{130}Te, SNO+ is also capable of a vast array of physics goals including the observation of geoneutrinos, reactor antineutrinos, supernova neutrinos, and other exotic physics such as axion-like particles and invisible nucleon decay. Low background detectors for rare event physics such as the SNO+ detector require extensive calibration systems.

The calibration hardware is designed to match the purity requirements of SNO+, be compatible with the liquid scintillator to be filled in SNO+, and be able to move sources in multiple orthogoal planes within the detector. As the detector is now fully operating in its first phase, extensive calibrations have been performed using optical and radioactive sources deployed within the detector. These calibrations are used to determine the PMT response, optical properties of the detector, the energy scale, energy resolution, linearity of response, detector asymmetries, and reconstruction efficiencies.

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