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SNO+ Cherenkov Umbilical

The SNO+ experiment is a liquid scintillator experiment located 2km underground at SNOLAB, Sudbury, Canada. The detector is a 12m diameter acrylic vessel (AV) and is filled with ˜800 tonnes of scintillator composed of linear alkylbenzene (LAB). A low background level and energy threshold is achievable due to the use of ultra-clean materials and high light-yield of the scintillator. These neutrino interactions are detected by ˜9800 photomultiplier tubes (PMTs). The primary goal of SNO+ is to detect neutrinoless double beta decay (0□□□) of tellurium (130Te). The calibration of the detector is executed using both optical and radioactive sources. One of which is the Cherenkov source, it uses 8Li decay to produce a tagged beta decay in an acrylic volume. A specially designed submersible umbilical cable is used to lower the source into the volume of the detector. The design requirements, such as radioactive cleanliness and compatibility, of 5/8”diameter umbilical needed for the Cherenkov source will be presented, along with the fabrication. This talk will also cover how the umbilical deployment will impact the detector with the help of a radon simulation.

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