

K40 Backgrounds in the SNO+ Neutrino Detector

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SNO+ is a scintillator filled neutrino detector located 2 km underground at SNOLAB. The primary goal of the SNO+ experiment is to search for neutrino-less double beta decay (0νββ). The rarity of this phenomenon necessitates a high level of sensitivity making background analysis crucial. In this presentation I will outline the methods used to find and characterize K40 backgrounds in SNO+ –a signal that is notoriously difficult to measure given its statistical rarity. The methods used in this study allowed for the first-ever direct measure of the K40 background taken from data collected by a neutrino detector partially filled with liquid organic scintillator. The applicability of this measurement is extensive –in addition to providing a quantitative measure of the K40 background, this signal can also be used to calibrate the SNO+ neutrino detector in an energy range where there are no other reliable sources.

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