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## **(G<sup>\*</sup>) (POS-33) Optical Calibration of the SNO+ Detector using Internal Backgrounds**

*Tuesday 7 June 2022 17:42 (2 minutes)*

The SNO+ experiment is a multipurpose neutrino detector located 2 km underground at SNOLAB in Sudbury, Ontario. The primary goal of the experiment is to search for neutrinoless double beta ( $0\nu\beta\beta$ ) decay in liquid scintillator loaded with  $^{130}\text{Te}$  in a low-background environment. An observation of a  $0\nu\beta\beta$  decay signal would demonstrate the Majorana nature of neutrinos. In order to resolve such a rare decay process, a precise optical calibration of the SNO+ detector is critical. This work presents a sensitive method of investigating the attenuation parameters in liquid scintillator by modelling the simulated radial light yield profiles of various internal background sources. The scintillator materials utilized in the SNO+ Monte Carlo (MC) simulation framework have been fine-tuned based on *ex-situ* measurements of the light yield and comparison to detector data.

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