

Performance of the SoLid reactor neutrino detector

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The SoLid collaboration operates since 2018 a 1.6 ton neutrino detector near the Belgian BR2 reactor, with as a main goal the search for observation of the oscillation of electron anti-neutrinos to previously undetected flavor states.

The highly segmented SoLid detector employs a novel compound scintillation technology based on PVT scintillator in combination with a LiFZnS screens containing ^6Li isotopes. The experiment has demonstrated a channel-to-channel response that can be controlled to the level of a few percent, an energy resolution of better than 14% at 1 MeV, and a determination of the interaction vertex with a precision of 5cm.

In this contribution we will discuss the technology choices that were made to construct the SoLid experiment, the experience gained from its commissioning, calibration, and the detector performance characteristics during two years of non-stop operation. We will also discuss an ongoing upgrade program of the detector and the expected improvements in performance associated with that.

I read the instructions

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