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Search for solar ^8B neutrinos with XENONnT

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The coherent elastic scattering of solar, diffuse supernova and atmospheric neutrinos on nuclei (CEvNS) represents the ultimate background for weakly-interacting massive particle (WIMP) detection in the GeV mass region. With the first detection of CEvNS only five years ago, these neutrinos represent a signal in themselves. Solar ^8B neutrinos are expected to be observed by the current generation of experiments, which would mark the first measurement of CEvNS from a natural source. XENONnT is one of these experiments. It has been taking science data since 2021 and recently published first results on low-energy electronic recoil signals and WIMPs. In this talk, I will present the experiment and outline the analysis effort for the first detection of solar ^8B CEvNS. Special emphasis is put on lowering the detection threshold of the detector and on the control of backgrounds near the threshold as prerequisites for a solar CEvNS detection. The current status of the search will be summarized.

Submitted on behalf of a Collaboration?

Yes

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