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The nEXO search for neutrinoless double beta decay

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The search for neutrinoless double beta decay (NDBD) provides the most sensitive experimental test of lepton number conservation, as well as a powerful experimental probe of the nature and mass scale of the neutrino. In this talk, I will introduce the nEXO experiment: a proposed next-generation search for the neutrinoless double beta decay of ^{136}Xe with a half-life sensitivity of $\sim 10^{28}$ years, two orders of magnitude beyond existing experiments. Building on techniques developed for the successful EXO-200 experiment, the primary detector will be a five-tonne, monolithic liquid xenon time projection chamber (TPC) with a source enriched to 90% in ^{136}Xe . We will discuss the science goals of nEXO, then describe how the experiment addresses the stringent low-background requirements of next-generation NDBD searches using a combination of conservative design choices (driven by EXO-200 experience) and novel readout schemes designed to improve the energy resolution and background rejection capabilities of the detector.

Collaboration name

nEXO

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