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Sensitivity of the nEXO experiment to neutrinoless double beta decay

The nEXO experiment is a proposed next-generation search for neutrinoless double beta decay ($0\nu\beta\beta$) of ^{136}Xe based on a 5-tonne monolithic liquid xenon TPC. A detailed study of the expected sensitivity, published in 2016, calculated the 90% CL exclusion sensitivity on the $0\nu\beta\beta$ half-life to be 9.2×10^{27} yrs. In this poster, we will present an updated sensitivity work based on advancements in the design and simulation of nEXO. Specific improvements include detailed, data-driven modeling of signal development in the charge readout tiles, the application of machine-learning analyses to improve signal/background separation, a more realistic accounting of the energy reconstruction including effects from scintillation light in the “skin” regions, new radioassay results of nEXO’s components, and an updated detector geometry which reflects changes made to the engineering design over the past three years.

Mini-abstract

Sensitivity of nEXO to neutrinoless double beta decay from updated design and improved simulations.

Experiment/Collaboration

nEXO

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