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The nEXO double-beta decay experiment

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The search for neutrinoless double-beta decay represents one of the most exciting opportunities to explore physics beyond the Standard Model. The knowledge that neutrinos are massive particles, yet, with masses that are many orders of magnitude smaller than those of charged fermions, provides encouragement to further push the sensitivity of these experiments.

nEXO is a 5-tonne detector based on the isotope ^{136}Xe in a single phase, liquid time projection chamber. Its design is based on EXO-200, the first 100kg-class experiment to take data, demonstrating the power of a monolithic detector with good energy resolution and superior topological event reconstruction. nEXO is expected to reach a half-life sensitivity of about 10^{28} years, covering substantial discovery space. The detector includes several state-of-the-art components but, at the same time, offers a conservative approach in which the background estimate is solidly grounded on existing materials and reliable simulation tools. In this talk the nEXO design and sensitivity reach will be discussed.

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