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The search for neutrinoless double beta decays with nEXO

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The observed asymmetry between matter and antimatter in the Universe still awaits for an explanation. If lepton number conservation, a global symmetry of the standard model, is violated, that could help understand it. The most sensitive probe to search for this violation is through a hypothetical decay known as neutrinoless double beta decay. Observation of this decay would prove that neutrinos are their own antiparticles, the so-called Majorana particles. The primary focus of the nEXO Collaboration is the search for this process using a liquid xenon time projection chamber, at the tonne-scale rooted on the success of the EXO-200 experiment. Our projections result in a half-life sensitivity beyond 10^{28} yr, sufficient to cover a milestone of this search consisting of the inverted ordering of neutrinos masses. This talk will introduce the search, describe the nEXO detector and its potential for discovery of new physics.

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