

The Search for $0\nu\beta\beta$ with nEXO

The nEXO neutrinoless double beta decay experiment aims to detect a hypothetical decay mode in the isotope xenon-136.

A positive observation of this decay mode would serve as direct evidence for lepton number violation and confirm the Majorana nature of neutrinos, representing a breakthrough in physics beyond the Standard Model. Such an observation could also offer new pathways for understanding the mass generation mechanism of fermions, and potentially provide insights into the matter-antimatter asymmetry problem.

To increase the likelihood of observing neutrinoless double beta decay, nEXO requires stringent measures for background mitigation such as placing the experiment deep underground to shield it from cosmic rays. Despite these measures, the residual cosmic muon flux remains a concern. This talk will present an evaluation of the cosmogenic background rate in nEXO as well as the impact of these backgrounds on the experiment's sensitivity to neutrinoless double beta decay.

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