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Searching for neutrinoless double beta decay with NEXT

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The NEXT (Neutrino Experiment with a Xenon TPC) project is an international collaboration aimed at finding evidence of neutrinoless double beta decay using gaseous xenon. After its initial phase of research and development, the team was able to run a small-scale experiment called NEXT-White, which took place from 2016 to 2021 at the Laboratorio Subterráneo de Canfranc, an underground facility in the Spanish Pyrenees. The current phase of the project involves the construction and operation of a larger experiment, NEXT-100, which will employ 100 kg of xenon. The data taking phase is expected to begin in the fourth quarter of 2023. In this talk, we will discuss the most recent results of the experiment and the plans to extend the technology towards the ton-scale for fully exploring the inverse hierarchy of neutrino masses.

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