INFN Istituto Nazionale di Fisica Nucleare

LNGS SEMINAR SERIES

Neutrinoless double beta decay with EXO-200 and nEXO

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EXO-200 is a single phase liquid xenon detector designed to search for the neutrinoless double-beta decay of Xenon-136. The experiment uses enriched liquid xenon (110 kg in the active volume) in an ultralow background time projection chamber installed at the Waste Isolation Pilot Plant (WIPP), a salt mine with a 1600 m water equivalent overburden near Carlsbad, NM, USA. The detector has demonstrated excellent energy resolution and background rejection capabilities to set a limit of 1.1×10^{25} yr at 90% C.L. Recently, the experiment has restarted data taking after a two year hiatus due to unforseen WIPP incidents. I will talk about the latest EXO-200 physics results, in particularly the search for the decays of Xe-136 to the excited state of Ba-136, and how the imminent upgrades to EXO-200 can help with the planning of tonne-scale next generation experiment, nEXO.

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