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Design and prospect of the CDEX-300 neutrinoless double beta decay experiment

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The CDEX-300 is a next generation neutrinoless double beta ($0\nu\beta\beta$) decay experiment based in China Jinping underground laboratory (CJPL). CDEX-300 aims at searching the $0\nu\beta\beta$ decay of Ge-76 in the inverted neutrino mass hierarchy using high purity germanium (HPGe) detectors. We propose to build a 200 kg HPGe array with 2.5 keV (FWHM) energy resolution and 1E-4 cts/keV/kg/yr background level in the 2039 keV signal region. CDEX-300 is projected to achieve a 1.92×10^{27} yr Ge-76 $0\nu\beta\beta$ half-life 3σ discovery sensitivity with a 10-yr operation. This report will outline the experimental design, background control technologies, and the physical potential of the CDEX-300.

Collaboration you are representing

CDEX

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