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## Sensitivity to the neutrinoless double beta decay of the DARWIN observatory

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The DARWIN observatory is a proposed next-generation experiment whose primary goal is to search for particle dark matter. It will operate 50 tonnes of natural xenon in a dual-phase time projection chamber under ultra-low background conditions. These two characteristics make DARWIN sensitive to other rare interactions, like the neutrinoless double beta decay of the isotope Xe136. Without isotopic enrichment DARWIN will contain in total more than 4.5t of Xe136. We present here the expected half-life sensitivity for this rare decay. This sensitivity is based on a detailed study of attainable backgrounds, Monte Carlo predictions and event topologies in the homogeneous target. We show that DARWIN will be comparable in its science reach to dedicated double beta decay experiments using enriched Xe136.

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