

Low Radioactivity Techniques (LRT2022)



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⁴²Ar background in nEXO

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The next-generation Enriched Xenon Observatory (nEXO) is a planned experiment utilizing 5 tonnes of isotopically-enriched liquid xenon (LXe) and a time projection chamber (TPC) to search for neutrinoless double beta decay of ¹³⁶Xe. The large, monolithic design of the nEXO TPC provides excellent shielding from the dominant background source - γ rays that originate from external materials. With an exceptionally clean central region of the TPC, we need to consider and quantify backgrounds that have previously been considered to be small relative to backgrounds from aforementioned γ rays or not considered at all. A case in the latter category is ⁴²Ar contamination in LXe. I will present the quantitative study of this ⁴²Ar background for nEXO.

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