

Background Studies for the ECHO Experiment

The **ECHO** experiment is designed to measure the ^{163}Ho electron capture decay spectrum up to its endpoint at 2.833 keV .

Such a measurement offers great potential to reach sub- eV sensitivity on the absolute electron neutrino mass m_{ν_e} .

A crucial aspect in this effort is the thorough understanding of the low energy background to experiment below 3 keV and its reduction.

Monte Carlo simulations in the GEANT4 framework have been conducted to investigate the impact on the sensitivity from radioactive contaminants in the experimental setup like ^{40}K , $^{166\text{m}}\text{Ho}$ and ^{210}Pb and muon induced cosmogenic background. In this poster, we present the results of our simulations with respect to acceptable contamination levels.

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