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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, ^{166m}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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