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CUPID-Mo, first sensitivity estimates for $2\nu\beta\beta(0\nu\beta\beta)$ decay of ^{100}Mo to excited states

CUPID-Mo is a demonstrator experiment for CUPID, a proposed next generation ton-scale $0\nu\beta\beta$ search. CUPID-Mo, located in Laboratoire Souterrain de Modane, consists of an array of 20 $\sim 0.2\text{kg}$ enriched $\text{Li}_2^{100}\text{MoO}_4$ scintillating cryogenic calorimeters with 20 Ge wafer light detectors for alpha and beta/gamma particle discrimination. Whilst CUPID-Mo aims to have leading sensitivity for $0\nu\beta\beta$ to the ground state of $\text{Ru}1$, there is also the potential to measure $2(0)\nu\beta\beta$ to excited states by looking at coincidences with gamma de-excitations. An excellent energy resolution of 2 - 7 keV over the full spectral range, along with good radiopurity leads us to expect a significant potential for new results. Here, we present a study of the signal efficiency and the predicted background index for various event signatures using a detailed Geant4 MC simulation.

Mini-abstract

CUPID-Mo sensitivity to double beta decay of ^{100}Mo to excited states

Experiment/Collaboration

CUPID-Mo

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