

Mo-100 double-beta decay search in the CUPID-Mo experiment with enriched scintillating bolometers

Know-how of ^{100}Mo -enriched Li_2MoO_4 scintillating bolometers has been recently developed by the LUMINEU Collaboration as a part of the R&D activities towards a tonne-scale $0\nu 2\beta$ experiment CUPID. The reproducibility of high performance ($\sim 5\text{-}6$ keV FWHM at 2615 keV, α background rejection on the level of about 9σ) and radiopurity (below 10 $\mu\text{Bq/kg}$ U/Th activity) has been demonstrated in multiple tests. Moreover, with only ~ 0.1 kg*yr of ^{100}Mo exposure, the measured $2\nu 2\beta$ decay half-life is one of the most precise values ever reported. As a follow-up of this activity, a demonstrator named CUPID-Mo is now ready to collect data in the Modane underground laboratory. CUPID-Mo consists of twenty 0.2-kg ^{100}Mo -enriched Li_2MoO_4 scintillating bolometers (containing more than 2 kg of ^{100}Mo) to be operated for at least 0.5 yr providing a sensitivity to $0\nu 2\beta$ decay of ^{100}Mo larger than 10^{24} yr. A prolongation of the experiment and its extension to the available ~ 7 kg of ^{100}Mo are under consideration.

Authorship annotation

for CUPID-Mo Collaboration

Session and Location

Monday Session, Poster Wall #76 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)