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Searching for neutrinoless double beta of ^{100}Mo : the CUPID-Mo experiment

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^{100}Mo deployed in the form of enriched Li_2MoO_4 crystals can be used as a promising scintillating bolometer to search for $0\nu\beta\beta$ in a tonne-scale experiment. In this talk we will review the properties of this target crystal and achieved bolometric detector performances that make it the baseline choice for CUPID (CUORE Upgrade with Particle ID).

CUPID-Mo, installed in the underground laboratory of Modane, consists of an array of 20 enriched ~ 0.2 kg Li_2MoO_4 crystals equipped with 20 cryogenic Ge bolometers to discriminate alpha from beta/gamma events by the detection of both heat and scintillation light signals. The commissioning has started in december 2018 and we have switched to routine data taking in spring 2019. In this talk, we will present results confirming an excellent bolometric performance of ~ 5 -6 keV energy resolution (FWHM) at 2615 keV, full alpha to beta gamma separation and improved estimates on the radiopurity of the crystals. We will also report on the background level observed in the region of interest and give a competitive limit on the neutrinoless double-beta decay half-life of Mo-100 as well the most precise measurement of the 2-neutrino decay mode. We will conclude with an expectation of the sensitivity of CUPID-Mo and prospects for CUPID.

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