



Contribution ID: 211

Type: **Parallel Contributed Talk**

The CUPID-Mo experiment for the search of neutrinoless double beta decay

Wednesday, 24 February 2021 10:40 (20 minutes)

The CUPID-Mo experiment is devoted to the search of neutrinoless double beta decay, $2\beta^0\nu$. This small-scale array of scintillating bolometers has set in 2020 the best limit to the half-life of $2\beta^0\nu$ in ^{100}Mo , with 2.17 kg x y of exposure. CUPID-Mo has demonstrated the maturity of the scintillating bolometric technique for CUPID (Cuore Upgrade with Particle Identification), the next generation $2\beta^0\nu$ ton-scale cryogenic experiment. CUPID-Mo consists of 20 enriched $\text{Li}^{2100}\text{MoO}_4$ scintillating crystals, at the Laboratoire Souterrain de Modane (France). The simultaneous measurement of heat and light allows rejecting the α background. In this talk we will present the data analysis corresponding to a 380 day period acquired between March 2019 and April 2020. This analysis lead to the new limit on $2\beta^0\nu$ in ^{100}Mo of $T_{1/2} > 1.5 \times 10^{24}$ yr at 90% CI, corresponding to an effective Majorana mass $< (0.31 - 0.54)$ eV.

Collaboration name

CUPID-Mo

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Session Classification: Double Beta decays and Neutrino Masses