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CUPID-0: a cryogenic calorimeter with particle identification for double beta decay search

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With their excellent energy resolution, efficiency, and intrinsic radio-purity, cryogenic calorimeters are primed for the search of neutrino-less double beta decay (0nDBD). The sensitivity of these devices could be further increased by discriminating the dominant alpha background from the expected beta like signal. The CUPID-0 collaboration aims at demonstrating that the measurement of the scintillation light produced by the absorber crystals allows for particle identification and, thus, for a complete rejection of the alpha background. The CUPID-0 detector, assembled in 2016 and now in commissioning, consists of 26 $Zn^{82}Se$ scintillating calorimeters for about 2×10^{25} 0nDBD emitters. In this contribution we present the preliminary results obtained with the detector and the perspectives for a next generation project.

Experimental Collaboration

CUPID-0

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