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Final results of the CUPID-0 Phase I experiment

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A convincing observation of neutrino-less double beta decay ($0\nu\text{DBD}$) relies on the possibility of operating high-energy resolution detectors in background-free conditions.

Scintillating cryogenic calorimeters are one of the most promising tools to fulfill the requirements for a next-generation experiment. Several steps have been taken to demonstrate the maturity of this technique, starting from the successful experience of CUPID-0.

The CUPID-0 experiment collected $10\text{ kg}\cdot\text{y}$ of exposure, running ^{26}Zn and ^{82}Se crystals during two years of continuous detector operation. The complete rejection of the dominant alpha background was demonstrated, measuring the lowest counting rate in the region of interest for this technique. Furthermore, the most stringent limit on the ^{82}Se $0\nu\text{DBD}$ was established.

In this contribution we present the final results of CUPID-0 Phase I, including a detailed model of the background and the measurement of the $2\nu\text{DBD}$ half-life.

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