

Results on 0ν Double Beta Decay with CUPID-0

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CUPID-0 represents the first demonstrator of **CUPID**, CUORE Upgrade with Particle IDentification. It exploits the scintillating bolometer technique in order to disentangle the nature of the interacting particles.

The detector consists of an array of 24 ZnSe crystals 95% enriched in ^{82}Se and two natural ZnSe crystals for a total mass of 10.5 kg installed in a dilution refrigerator located underground in the Laboratori Nazionali del Gran Sasso.

We will report the first result of the search for neutrinoless double beta decay ($0\nu\text{DBD}$) in ^{82}Se based on the data collected between June and November 2017. We find no evidence in a $3.45 \text{ kg} \cdot \text{yr}$ exposure and we set the most stringent lower limit on the $0\nu\text{DBD}$ ^{82}Se half life $>2.4 \cdot 10^{24} \text{ yr}$ (90% C.I.) which corresponds to an effective Majorana neutrino mass $m_{\beta\beta} < (376-770) \text{ meV}$.

Thanks to the simultaneous readout of the heat and light signals we reach the lowest background level ever achieved with bolometric experiments: $(3.6^{+1.9}_{-1.4}) \cdot 10^{-3} \text{ counts}/(\text{keV} \cdot \text{kg} \cdot \text{yr})$.

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