

Status and prospects of the search for neutrinoless double-beta decay with the CUORE experiment

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The CUORE experiment, expected to start operations in early 2016, will search for neutrinoless double beta decay of ^{130}Te and will be one of the most competitive neutrinoless double beta decay experiments in the near future.

Its demonstrator (CUORE-0) has reported in 2015 no evidence for neutrinoless double-beta decay and placed a lower bound on the decay half-life, $T(0\nu)_{1/2} > 2.7 \times 10^{24}$ yr at 90% C.L.

The CUORE projected sensitivity is 9.5×10^{25} yr at the 90% confidence level, which corresponds to an upper limit on the effective Majorana mass in the range of 50–130 meV.

I will discuss the status of the CUORE experiment and give a brief update on the background rejection techniques that may significantly improve the search sensitivity of bolometric detectors to fully explore the inverted neutrino mass hierarchy.

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