

First $0\nu\beta\beta$ Decay Search Results from CUORE and Status of CUPID R&D

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The Cryogenic Underground Observatory for Rare Events (CUORE) is a large neutrinoless double beta ($0\nu\beta\beta$) decay search experiment currently taking data at the Laboratori Nazionali del Gran Sasso (LNGS). Such searches can address fundamental questions that remain about the nature of the neutrino such as the mass hierarchy, whether they are Majorana fermions, and may present new physics beyond the Standard Model via lepton number violation. CUORE is the most massive array of crystal bolometers in the world containing a total of 988 TeO₂ crystals (742 kg) with an expected sensitivity to the ¹³⁰Te $0\nu\beta\beta$ half-life of 9×10^{25} years (90% C.L.) after 5 years of operation. This talk will discuss the recently published CUORE limit on the ¹³⁰Te $0\nu\beta\beta$ half-life, $T > 1.3 \times 10^{25}$ years (90% C.L.), as well as the current status of CUORE. Additionally an overview of the current state of R&D towards the proposed next generation experiment, CUORE Upgrade with Particle ID (CUPID), will be presented.

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