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CUORE: the near future of neutrinoless double beta decay searches

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Neutrinoless double beta decay is a powerful tool to investigate the fundamental nature of neutrinos and to determine the absolute neutrino mass scale. To date, CUORE is the only fully approved next generation 1-ton size experiment with the goal of exploring the inverted hierarchy region for the neutrino masses.
CUORE is an array of 988 TeO2 cryogenic detectors containing 200 kg of Te-130 - the neutrinoless double beta decay candidate - and it is presently being built in Gran Sasso Underground Laboratory. Data taking is due to start in 2012. The feasibility of the project has been proved by CUORICINO, the pilot experiment that took data until 2008, for about five years, with 62 TeO2 cryogenic detectors in Gran Sasso Laboratory. CUORICINO will be replaced in 2010 by CUORE-0, the first CUORE tower to be installed in the CUORICINO cryogenic facility. CUORE-0 will take data until CUORE start. In this talk I will report on the final results of CUORICINO, and discuss CUORE-0 and CUORE potential and state of the art.

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