Neutrinoless double beta decay with CUORE-0: physics results and detector performance

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The CUORE-0 experiment searches for neutrinoless double beta decay in 130Te. It consists in an array of 52 tellurium dioxide crystals, operated as bolometers at a temperature of 10mK, with a total mass of about 39 kg of TeO2. CUORE-0 has been built to test the performance of the upcoming CUORE experiment and represents the largest 130Te bolometric setup currently in operation. This experiment has been running in the Gran Sasso National Laboratory (Italy) since March 2013.

The talk will report the results of a search for neutrinoless double beta decay in 9.8 kg-years 130Te exposure, which represents the most stringent limit to date on this half-life. The performance of the detector in terms of background rate and energy resolution will be also presented.