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CUORE-0 Detector for Double Beta Decay

The CUORE (Criogenic Underground Observatory for Rare Events) experiment will search for the neutrinoless double beta decay of 130Te with the bolometric technique, with an expected sensitivity of about 50meV on the neutrino effective mass.
CUORE-0 is the first CUORE tower, that will be assembled and operated in the near future in the Gran Sasso underground laboratory. In this poster, the technical details of the detector and its scientific potential are presented and discussed. We provide an accurate description of the detector structure, of the radio-clean assembly procedure and of the basic components of the elementary module.
On the basis of the background expectation for CUORE-0, we estimate and present the physics reach of this experiment, that will be one of the most sensitive search for neutrinoless double beta decay worldwide in the next years. Its planned sensitivity will improve the limit set by Cuoricino in a few months after the start-up.

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