

Abstract Submitted
for the APR09 Meeting of
The American Physical Society

The Energy Calibration System for the CUORE Bolometric Double Beta Decay Experiment SAMUELE SANGIORGIO, University of Wisconsin, CUORE COLLABORATION — CUORE, the Cryogenic Underground Observatory for Rare Events, employs an array of 988 TeO₂ bolometers to search for neutrinoless double beta decay ($\beta\beta 0\nu$) in ¹³⁰Te. The signature for $\beta\beta 0\nu$ is a peak at the expected Q-value of 2530 keV in the summed energy spectrum of all detectors. In CUORE, bolometers are operated as perfect calorimeters and therefore a precise and reliable energy calibration is crucial for the success of the experiment. An innovative calibration system is being developed to provide energy calibration of all the detectors in the CUORE array. The project is particularly complex due to its integration in a unique low-temperature cryostat (detectors operate at 10 mK) and to the strict ultra-low background requirements of CUORE. We present the design, challenges and expected performances of this low-temperature calibration system.

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Date submitted: 05 Jan 2009

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