

Abstract Submitted
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Development and Testing of a Novel Thermalization Mechanism for the CUORE Detector Calibration System¹ NATANIA WOLANSKY, Harvard University — The Cryogenic Underground Observatory for Rare Events (CUORE) will search for the signature of neutrinoless double beta decay from Tellurium-130 using an array of large crystals of Tellurium Oxide that operate as both a source of radiation and bolometric detectors, kept in a 10mK dilution refrigerator. Energy deposited in the detectors will be detected as a temperature rise in the crystals. Non-linear detector response from the bolometers with respect to time and temperature necessitates a calibration system which allows the individual calibration of each bolometer with a radioactive Th-232 source. The low-background environment of the detector requires the calibration sources to be inserted into the cryostat for each calibration campaign. A thermalization mechanism to cool the calibration source capsules from 300K to 4K before entering the 10mK chamber was designed and tested to operate within the constraints of the cryostat system. I report on the mechanical and cryogenic temperature tests of the system.

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