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Assembly and Testing of the CUORE Calibration System IAN GUINN, University of Wisconsin-Madison, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) will search for neutrinoless double beta decay ($0\nu\beta\beta$) of ^{130}Te. The observation of this decay would determine that neutrinos are of Majorana type, that is their own anti-particle. An array of natural TeO_2 bolometers, operated at 10 mK in order to minimize background radiation, will act as source and detector for this experiment. Since the extraction of the signal is based on energy information only, a precise calibration of the bolometers is extremely important. To calibrate the detectors, twelve strings with radioactive sources will be periodically lowered by motors through guide tubes into precise positions within the cryostat. The sources must be lowered carefully to avoid fricional heating and vibrations that may disrupt the calibration, so encoders, proximity sensors and load cells will be used to constantly monitor the status of each source as they are deployed. Furthermore, the source carriers have to be cooled to 4K to meet heat load requirements of the detector array, using a newly developed thermalization mechanism. This poster will describe testing of a prototype of the calibration system for CUORE and the development of the software control system.

Ian Guinn
University of Wisconsin-Madison

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