

Abstract Submitted
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Noise Correlation with Acoustic Signals in CUORE KENNETH VETTER, University of California, Berkeley, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) experiment is an ongoing search for neutrinoless double beta decay ($0\nu\beta\beta$) located at the Gran Sasso National Laboratory (LNGS) in Italy. Recent work has found that the CUORE bolometers are sensitive to acoustic and seismic events originating from outside the detector at LNGS. To measure these events, microphones and accelerometers have been installed around the cryostat. It is expected that down-mixing occurs during the conversion of acoustic energy to heat, which is ultimately measured by the bolometers. In this presentation, we show the correlation between acoustic noise and low-frequency noise in the CUORE detector. Additionally, the current thermal model for CUORE indicates a small nonlinearity in the detector response. We measure this nonlinearity in the frequency domain using bispectral analysis, a technique used in neuroscience and seismology to search for nonlinear interactions. Finally, we examine how decorrelating this noise affects the energy resolution of the CUORE detector.

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