

# Novel Active Noise Cancellation Algorithms for CUORE

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The Cryogenic Underground Observatory for Rare Events (CUORE) experiment is an ongoing search for neutrinoless double beta decay located at the Gran Sasso National Laboratory (LNGS) in Italy. Recent work has found that the CUORE calorimeters are sensitive to acoustic and seismic events originating from outside the detector at LNGS. To measure the effect of these mechanical disturbances on the calorimeter signals, microphones and accelerometers were installed around the CUORE cryostat. Existing adaptive algorithms which use auxiliary devices (e.g. accelerometers) to remove microphonic noise from high-purity germanium detectors may be changed to remove excess noise from low-temperature calorimeters. Here I will present how said changes can be implemented for noise removal from calorimeters instrumented with neutron transmutation doped (NTD) germanium detectors or transition edge sensors (TES) and demonstrate how this new adaptive algorithm improves the energy resolution of these devices.

## TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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