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## **Denoising Algorithms for the CUORE Experiment**

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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. Our previous work has shown that the quality of CUORE data can be improved with noise decorrelation algorithms using data from auxiliary devices including microphones, accelerometers, and seismometers. In this talk, I will discuss the implementation of these noise decorrelation algorithms in the CUORE analysis framework. I will showcase some results of the noise decorrelation including the impact on the energy resolution of the CUORE detector across multiple channels. I will also discuss how these denoising algorithms can be expanded to model non-linear systems and how these expansions improve the performance of the aforementioned noise decorrelation algorithms for the CUORE detector. Finally, I will discuss the fact that the CUORE detector is sensitive to vibrational noise from sea storms near LNGS in the Tyrrhenian and Adriatic seas and how we are able to demonstrate this using seismometric and geological data.

### **Submitted on behalf of a Collaboration?**

Yes

**Author:** VETTER, Kenny (UC Berkeley)

**Presenter:** VETTER, Kenny (UC Berkeley)

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