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Study of χ^2 Metric Based Analysis Cut on Ultra Low Energy Spectrum of CUORE Data REBECCA KOWALSKI, DANIELLE SPELLER , Johns Hopkins University, ANTONIO BRANCA, Universit di MilanoBicocca, CRYOGENIC UNDERGROUND OBSERVATORY FOR RARE EVENTS COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) is a ton-scale bolometer located at Gran Sasso National Laboratories in Assergi, Italy. To date, CUORE has collected over 1000 kg yr of exposure. Using the spectrum provided by the experiments bolometric detectors, we optimize for a selection of events at energies lower than typically used for CUORE beta-decay searches in an effort to increase sensitivity to dark matter candidates. This is done with a reduced χ^2 metric available from the cubic-spline fit of pulses detected per bolometer (after applying the Optimum Filter and Optimum Trigger previously developed for use in CUORE) as a shape indicator of a good event. This metric was explored for CUORE-0 as a technique to increase the usable physics data at lower energies. However, these studies were performed for higher analysis thresholds than suitable for a dark matter search. Using a modified energy-dependent selection cut, we can improve the event selection as a function of energy, as opposed to relying on just the χ^2 as was done previously. We investigate the impact on the quality of selected data in energies lower than 40keV.

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