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Characterization of Two Ton NaI Scintillator[1] ALLETA MAIER, Duke University, COHERENT COLLABORATION — The COHERENT collaboration is dedicated to measuring Coherent Elastic Neutrino-Nucleus Scattering (CEνNS), an interaction predicted by the standard model that ultimately serves as a background floor for dark matter detection. In the pursuit of observing the N^2 scaling predicted, COHERENT is deploying two tons of NaI[Tl] detector to observe CEνNS recoils of sodium nuclei. Before the two tons of this NaI[Tl] scintillator are deployed, however, all crystals and PMTs must be characterized to understand the individual properties vital to precision in the measurement of CEνNS. This detector is also expected to allow COHERENT to observe charged current and CEνNS interactions with ^{127}I. A standard operating procedure is developed to characterize each detector based on seven properties relevant to precision in the measurement of CEνNS: energy scale, energy resolution, low-energy light yield non-linearity, decay time energy dependence, position variance, time variance, and background levels. Crystals will be tested and characterized for these properties in the context of a ton-scale NaI[Tl] detector. Preliminary development of the SOP has allowed for greater understanding of optimization methods needed for characterization for the ton scale detector.

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