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Characterizing Background Events in Neutron Transmutation Doped Thermistors for CUORE-0 SURYABRATA DUTTA, Yale University, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) is a ton-scale neutrinoless double-beta decay experiment operating at the Laboratori Nazionali del Gran Sasso (LNGS). The experiment is comprised of 988 TeO_2 bolometric crystals arranged into 19 towers and operated at a temperature of $\sim$15 mK. A neutron-transmutation-doped (NTD) Ge thermistor measures the thermal response from particles incident on the crystals. However, bulk and surface contamination of the NTD thermistors themselves produce distorted thermal responses inside the thermistor volume. Although these pulses are efficiently removed from the double-beta decay analysis by pulse shape cuts, they can be used to extract information about thermistor contamination. I will present a multifaceted approach to characterize these events, in which I implement an improved hot-electron thermal model, Geant4 Monte Carlo simulations of background events, and data from a previous experiment, CUORE-0, reprocessed with a new optimal filter. Using this approach, rates and energy deposition from contamination inside the NTD thermistors are measured, giving us better understanding of a CUORE background source.

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