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Analysis of the CRESST warm-up test data

The Cryogenic Rare Event Search with Superconducting Thermometers (CRESST) is one of the most sensitive experiments for the direct detection of light dark matter via nuclear recoils. At low recoil energies below roughly 200eV, the sensitivity is affected by the presence of an increasing event rate for which dark matter as a major contribution has already been ruled out. Such a low energy excess (LEE) is not only observed in all CRESST detectors but also in other cryogenic experiments, so far without a definitive answer to what the origin is.

Between Oct. 2021 and Feb. 2024, CRESST has performed dedicated studies on the behavior of the excess by warming up the cryostat to different temperatures, alternating with periods of data taking. We will present the current status of the corresponding analysis, which utilizes two-dimensional unbinned fits on time and energy simultaneously. A focus lies on the temporary rises and following decays in the LEE event rate that have been observed to occur after such warm-ups.

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