

Cryogenic Detectors with Superconducting Thermometers for Light Dark Matter Direct Search

The CRESST (Cryogenic Rare Event Search with Superconducting Thermometers) is a direct dark matter search experiment, located at the Laboratori Nazionali del Gran Sasso (LNGS) in Italy, where an overburden of 1400m of rock (3800m water equivalent) provides an efficient reduction of the cosmic radiation background. In the CRESST experiment, ~25g scintillating CaWO_4 crystals are used as target material for elastic DM-nucleus scattering and operated as cryogenic detectors at ~15mK temperatures. The simultaneous measurement of the phonon signal from each target crystal and the emitted scintillation light in a separate cryogenic light detector provide event-by-event particle identification for background suppression. In 2018, the first measurement campaign of CRESST-III was successfully completed, achieving an unprecedented energy threshold for nuclear recoils, lower than 100 eV. Such low threshold provides a significant boost in sensitivity allowing for the first time to probe dark matter particle masses as low as $160\text{MeV}/c^2$.

In this contribution the latest results of CRESST-III will be presented accompanied by a brief status update on the ongoing activities of the experiment.

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