

Direct dark matter search with the CRESST-III experiment

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The CRESST experiment, located at Laboratori Nazionali del Gran Sasso in Italy, searches for dark matter particles via their elastic scattering off nuclei in a target material.

The CRESST target consists of scintillating CaWO_4 crystals, which are operated as cryogenic calorimeters at millikelvin temperatures. Each interaction in the CaWO_4 target crystal produces a phonon signal and a light signal that is measured by a second cryogenic calorimeter.

With the CRESST-II result in 2015, the experiment is leading the field of direct dark matter search for dark matter masses below $1.7\text{GeV}/c^2$, extending for the first time the reach of a direct search to the sub- GeV/c^2 mass region.☒

For CRESST-III, whose Phase 1 started data taking in August 2016, detectors have been optimized to reach the performance required to further probe the low-mass region with unprecedented sensitivity.

In this contribution the achievements of the CRESST-III detectors will be thoroughly discussed together with preliminary results and perspectives of Phase 1.

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