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Direct Dark Matter search with the CRESST-III experiment: Status and Prospects

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The CRESST (Cryogenic Rare Event Search with Superconducting Thermometers) experiment operates cryogenic detectors in a low-background setup at the deep underground facility of LNGS (Laboratori Nazionali del Gran Sasso) in Italy to search for nuclear recoils induced by dark matter particles. To collect the signal, a variety of target crystals such as CaWO_4 , Al_2O_3 , Si, and LiAlO_2 are equipped with transition edge sensors (TES). With detection thresholds for nuclear recoil down to 10 eV, CRESST-III is one of the leading experiments in the search for sub-GeV dark matter particles.

The ongoing CRESST-III measurement campaign is focused on investigating an excess of events above the level expected from known background sources observed at sub-keV energies (the so-called low energy excess), which limits the sensitivity of the experiment to low-mass dark matter. In this talk, we present the status of CRESST-III and report on the latest dark matter results, low energy excess studies, and prospects for precise sub-keV nuclear recoil calibration. We conclude the talk with our future plans and prospects.

Submitted on behalf of a Collaboration?

Yes

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