

Searches for dark matter with the CRESST III-Experiment

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CRESST-III is a cryogenic dark matter experiment operated at the Gran Sasso laboratory in Italy. The primary research interest is the search for dark matter in the sub-GeV/ c^2 mass region. Dark matter particles are detected by measuring the nuclear recoil energy from the elastic scatter with the dark matter particle. The experimental challenge for reaching such a low mass region is to achieve the lowest possible energy detection threshold. Currently CRESST-III has obtained an energy detection threshold of 30.1 eV. The target material is a 23.6g CaWO₄-crystal operated at a temperature of about 15 mK and using a dual read-out scheme. By measuring the phonons and the scintillation light an active background suppression can be reached. We will present the spin-independent results from direct dark matter searches with a sensitivity for dark matter masses down to 160 MeV/ c^2 . We will discuss a GEANT4 based electromagnetic background model to evaluate the content and the composition of the background. Currently 68+-16% of the overall background can be explained by this model. The latest R&D efforts are presented and an outlook of the future stages of the experiment will be given.

Secondary track (number)

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