

Radiopurity in the direct dark matter search CRESST experiment

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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. An intrinsic radioactive contamination of the crystals and surrounding materials of as low as possible is crucial for the sensitivity of the experiment. Since 2011 CaWO_4 crystals are grown at the crystal laboratory of the Technische Universität München (TUM) to better meet the requirements of the CRESST experiment. The new generation of TUM-grown crystals are grown using recrystallization and low speed growing.

Furthermore, an extensive screening campaign is going on to study the level of contamination in parts of the setup. Its results can be used as an input for the simulation of the background of the CRESST experiment.

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