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Search for light dark matter with CRESST-III

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The CRESST (Cryogenic Rare Event Search with Superconducting Thermometers) experiment, located in Laboratori Nazionali del Gran Sasso - INFN in Italy, aims to directly detect light dark matter (DM) particles. Scintillating CaWO_4 crystals, equipped with Transition Edge Sensor (TES), are operated as cryogenic detectors at mK temperatures, as target material for DM-nucleus scattering. CRESST achieved outstandingly low nuclear recoil thresholds O(10-30 eV), yielding world-leading sensitivity for light dark matter particles for masses below 1.7 GeV/cˆ2. In 2019, CRESST observed for the first time an excess of events rising exponentially below 200 eV, known as the Low Energy Excess (LEE), that is currently limiting the sensitivity of many experiments in the field and whose origin remains unclear. To better scrutinize LEE and produce improved DM results, CRESST developed the DoubleTES approach that, using the coincidence readout of two TESs on the same detector, allows suppression of events generated near the sensor. The most recent updates on the identification and rejection of LEE are reported, together with the most recent results on DM.

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Classification de Session: Talk