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Recent progress on BSM and dark matter searches in CUORE

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The Cryogenic Underground Observatory for Rare Events (CUORE) is the first tonne-scale experiment using cryogenic calorimeters. The detector is located underground at the Laboratori Nazionali del Gran Sasso in Italy and consists of 988 TeO2 crystals operated in a dilution refrigerator at a base temperature of about 10 mK. Thanks to the large exposure, sharp energy resolution, segmented structure and radio-pure environment, CUORE provided the most sensitive exclusion limit of the neutrinoless double beta decay of 130Te. The same features offer a unique opportunity to search for other beyond Standard Model processes including interactions of dark matter candidates, such as Solar Axions and WIMPs, in the CUORE crystals. We expect that these events will deposit a lower amount of energy than the neutrinoless double beta decay. Thus, we are working forward to demonstrate the potentiality of the CUORE detector technology in the keV region and profit from the very large amount of data collected so far (2 ton yr of exposure) to search for dark matter evidences.

Submitted on behalf of a Collaboration?

Yes

Author: RESSA, Alberto (Sapienza University of Rome)

Presenter: RESSA, Alberto (Sapienza University of Rome)

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