

## New results from the CUORE experiment

*Thursday, 5 December 2019 15:10 (20 minutes)*

The Cryogenic Underground Observatory for Rare Events (CUORE) is the first bolometric experiment searching for neutrinoless double-beta decay ( $0\nu\beta\beta$ ) that has been able to reach the one-ton scale. The detector, located at the Laboratori Nazionali del Gran Sasso in Italy, consists of an array of 988  $\text{TeO}_2$  crystals arranged in a compact cylindrical structure of 19 towers. The construction of the experiment was completed in August 2016 with the installation of all towers in the cryostat. CUORE achieved its first physics data run in 2017 corresponding to a  $\text{TeO}_2$  exposure of 86.3 kg-yr and a median statistical sensitivity to a  $^{130}\text{Te}$   $0\nu\beta\beta$  half-life of  $7.0 \times 10^{24}$  yr. Following multiple optimization campaigns in 2018, CUORE is currently in stable operating mode and has accumulated data corresponding to a  $\text{TeO}_2$  exposure approaching 500 kg-yr. In this talk, we present the updated  $0\nu\beta\beta$  results of CUORE, as well as review the detector performance. We finally give an update of the CUORE background model and the measurement of the  $^{130}\text{Te}$  two neutrino double-beta decay ( $2\nu\beta\beta$ ) half-life.

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