

## Latest results from the CUORE experiment

*Thursday 9 September 2021 16:40 (20 minutes)*

The Cryogenic Underground Observatory for Rare Events (CUORE) is the first bolometric experiment searching for  $0\nu\beta\beta$  decay that has been able to reach the one-tonne mass scale. The detector, located at the LNGS in Italy, consists of an array of 988 TeO<sub>2</sub> crystals arranged in a compact cylindrical structure of 19 towers. CUORE began its first physics data run in 2017 at a base temperature of about 10 mK and in April 2021 released its 3rd result of the search for  $0\nu\beta\beta$ , corresponding to a tonne-year of TeO<sub>2</sub> exposure. This is the largest amount of data ever acquired with a solid state detector and the most sensitive measurement of  $0\nu\beta\beta$  decay in <sup>130</sup>Te ever conducted, with a median exclusion sensitivity of  $2.8 \times 10^{25}$  yr. We find no evidence of  $0\nu\beta\beta$  decay and set a lower bound of  $2.2 \times 10^{25}$  yr at a 90% credibility interval on the <sup>130</sup>Te half-life for this process. In this talk, we present the current status of CUORE search for  $0\nu\beta\beta$  with the updated statistics of one tonne-yr. We finally give an update of the CUORE background model and the measurement of the <sup>130</sup>Te  $2\nu\beta\beta$  decay half-life, study performed using an exposure of 300.7 kg·yr.

### Working group

WG5

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**Session Classification:** WG 5