Contribution ID: **60** Type: **not specified**

Latest results from the CUORE experiment

Monday 26 June 2023 15:20 (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_2 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_2 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 ^{130}Te ever conducted, with a median exclusion sensitivity of 2.8×10^{25} yr. We find no evidence of $0\nu\beta\beta$ decay and set a lower bound of 2.2×10^{25} yr at a 90% credibility interval on the ^{130}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 ^{130}Te $2\nu\beta\beta$ decay half-life.

Author: COLLABORATION, The CUORE

Presenter: COLLABORATION, The CUORE

Session Classification: Parallel

Track Classification: Particle