

Results from the CUORE experiment

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 consists of an array of 988 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. Following a cooldown, diagnostic, and optimization campaign, routine data-taking began in spring 2017. In this poster, we present the $0\nu\beta\beta$ results of CUORE from examining a total TeO_2 exposure of $86.3 \text{ kg}\cdot\text{yr}$, characterized by an average energy resolution of 7.7 keV FWHM and a background in the region of interest of $0.014 \text{ counts}/(\text{keV}\cdot\text{kg}\cdot\text{yr})$. In this physics run, CUORE placed a lower limit on the ^{130}Te $0\nu\beta\beta$ half-life of $T_{1/2}^{0\nu} > 1.3 \times 10^{25} \text{ yr}$ (90% C.L.).

Authorship annotation

The CUORE Collaboration

Session and Location

Monday Session, Poster Wall #38 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)