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The search for 0νECβ+ of 120Te with CUORE

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The search for $0\nu EC\beta^+$ of ^{120}Te with CUORE
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CUORE (Cryogenic Underground Observatory for Rare Events) is a ton-scale experiment located at the LNGS searching for neutrinoless double beta decay of ^{130}Te. The detector consists of TeO_2 crystals operated as cryogenic calorimeters. The use of tellurium with natural isotopic composition allows us to search for the decay of other isotopes. The neutrinoless positron emitting electron capture of ^{120}Te (natural abundance 0.09(1)%) has a clear signature from the 511-keV annihilation γ rays. We present an analysis of this process based on a new algorithm to perform the simultaneous spectral fit over five selected decay scenarios. Each scenario is characterized by a set of crystals simultaneously interested by a detectable energy release. We describe the blinded analysis we performed to model multi-site background structures and study the systematics.

Collaboration name

CUORE

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