

Abstract Submitted  
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**Search for Neutrinoless  $\beta^+/EC$  Decay of  $^{120}\text{Te}$  with CUORE-0 Data** GIOVANNI BENATO, UC Berkeley, CUORE COLLABORATION — Neutrinoless  $\beta^+/EC$  decay is a process beyond the Standard Model which violates the total lepton number conservation and would prove that neutrinos have a Majorana mass component. We present a search for the neutrinoless  $\beta^+/EC$  of  $^{120}\text{Te}$  using CUORE-0 data. We developed a new analysis method involving the simultaneous fit of signatures with different multiplicities, and of data subsets with different background and/or signal efficiency. We obtain a limit on the half life of the decay of  $T_{1/2} > 1.7 \cdot 10^{21}$  yr at 90% credible interval (C.I.), or  $T_{1/2} > 2.7 \cdot 10^{21}$  yr (90% C.I.) if combined with the Cuoricino result. This analysis procedure can be directly applied to the CUORE data, once they are available, yielding an increase in sensitivity of two orders of magnitude thanks to the larger mass and higher containment efficiency for high-multiplicity events.

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