

Abstract Submitted
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Search for $0\nu\beta\beta$ with CUORE: Preliminary results from CUORE-0 JONATHAN OUELLET, UC Berkeley, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) is a next generation bolometric detector searching for neutrinoless double beta decay ($0\nu\beta\beta$) and other rare processes operated in Gran Sasso National Laboratories in Italy. Its predecessor, Cuoricino, set the most stringent limits on the $0\nu\beta\beta$ half-life in ^{130}Te to date, at $T_{1/2} \geq 2.8 \times 10^{24}$ yr (90% C.L.). CUORE will have an active mass nearly 20 times larger and an anticipated background nearly 20 times lower, providing a sensitivity to $0\nu\beta\beta$ half-life of $T_{1/2} > 1.6 \times 10^{26}$ yr (68% C.L.) after 5 years of run time. This is achieved through improved bolometer handling techniques, improved bolometer-thermistor coupling, thermistor instrumentation and material radiopurity. CUORE-0, the first of 20 towers for CUORE is currently operating in the old Couricino cryostat and began data taking in October 2012. CUORE-0 will surpass the limits set by Cuoricino after less than a year of run time. Here we present early performance results from CUORE-0: detector resolutions, backgrounds, and efficiencies.

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