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Search for $0\nu\beta\beta$ with CUORE: Preliminary results from CUORE-0 JONATHAN OUELLET, University of California, Berkeley, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) is a next-generation bolometric detector that will search for neutrinoless double-beta ($0\nu\beta\beta$) decay and other rare processes. It is currently in the advanced stages of construction in the Gran Sasso National Laboratories in Italy. Its predecessor, Cuoricino, set the most stringent limits to date on the $0\nu\beta\beta$ decay half-life of ^{130}Te, at $T_{1/2} \geq 2.8 \times 10^{24}$ yr (90% C.L.). CUORE will have an active mass nearly 19 times larger and an anticipated background about 16 times lower, providing a 1σ sensitivity to $0\nu\beta\beta$ decay half-life of $T_{1/2} \geq 1.6 \times 10^{26}$ yr after 5 years of live time. CUORE is expected to begin taking data in early 2015. CUORE-0, the first stage of CUORE, is currently operating in the former Cuoricino cryostat and has been taking data since March 2013. Here we present early results from CUORE-0 and the implications for CUORE.

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