THE CRYOGENIC UNDERGROUND OBSERVATORY FOR RARE EVENTS: STATUS AND PROSPECTS

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The Cryogenic Underground Observatory for Rare Events (CUORE) is a large-scale double beta decay experiment utilizing cryogenic bolometers that is currently nearing completion at the Gran Sasso National Laboratory in Italy. Its primary focus is to search for the neutrino-less double beta decay of ^{130}Te with a projected sensitivity to Majorana neutrino masses reaching into the inverted mass hierarchy region. The detector is composed of 988 5x5x5-cm TeO_2 crystals of natural isotopic composition arranged in 19 towers of 52 crystals each, all housed in a common dilution refrigerator. A single CUORE-like tower, CUORE-0, was assembled and operated as a stand-alone detector for a period of approximately two years. The results from CUORE-0 and the current status and physics potential of CUORE will be presented.