Abstract Submitted
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Development of enriched $^{130}TeO_2$ crystals for neutrinoless double beta decay searches[1] BARBARA S. WANG, University of California at Berkeley, CUORE COLLABORATION — The Cryogenic Underground Observatory for Rare Events (CUORE) will search for the neutrinoless double-beta decay of ^{130}Te using an array of 988 bolometers comprised of natural-isotopic-composition TeO_2. We are now investigating the feasibility of producing ^{130}Te-enriched crystals for a possible future improved search of this kind. Together with the Shanghai Institute of Ceramics, we have developed a tentative crystal-production plan. Ten kilograms of 92%-enriched ^{130}Te metal are currently available for this project. In order to test possible effects on the crystal growth process, 500 grams of this material have been converted into TeO_2 and then blended with natural TeO_2 to produce three 5x5x5-cm^3 TeO_2 crystals with a 40% ^{130}Te abundance. These crystals have been tested as bolometers at the Gran Sasso National Laboratory. Preliminary results from this effort will be presented along with plans for further development of enriched crystals for neutrinoless double-beta decay searches.

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