

Abstract Submitted
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CUORE:

Cryogenic

Maintenance

ALISON GOODSELL, ROBIN REIL, California Polytechnic State Univ, San Luis Obispo, CUORE COLLABORATION¹ — CUORE (Cryogenic Underground Observatory for Rare Events) will be the largest detector used to investigate neutrinoless double beta decay in tellurium-130 (Te-130). Neutrinoless double beta decay has never been observed in nature. If detected, it would be a major scientific discovery indicating that the neutrino is its own antiparticle; this breakthrough would signal a fundamental revision to the Standard Model of physics. Located in Assergi, Italy at the Gran Sasso National Laboratory (LNGS), CUORE will be a cryogenic bolometer composed of 988 tellurium dioxide (TeO₂) crystals with a total mass of 750 kg. Over the summer of 2009, we traveled to the LNGS to assist the CUORE Collaboration by performing standard shifts for the Three Towers Test, a diagnostic experiment used to determine optimal hardware cleaning methods. This involved refilling the cryogenics system with liquid helium coolant to keep the crystal bolometers at an operating temperature of approximately 10 mK, and other routine tasks. This work was supported in part by the NSF RUI grant PHY-0653284.

¹We are affiliated with, but not members of, the CUORE Collaboration.

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