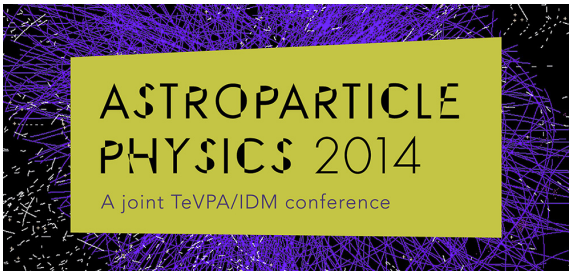

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Neutrinoless double beta decay and dark matter searches with CUORE-0 and CUORE

Thursday 26 June 2014 17:30 (20 minutes)

The CUORE (Cryogenic Underground Observatory for Rare Events) experiment, currently under construction at the Gran Sasso National Laboratory (LNGS), will operate 988 TeO_2 bolometers at a temperature of around 10 mK, adding up a total mass of 750 kg. CUORE-0, a 52 TeO_2 bolometers array built using the same protocols developed for CUORE, is currently in operation at LNGS and has recently released the first data, showing a very promising background reduction with respect to its predecessor CUORICINO. Although the primary goal of the experiment is to look for neutrinoless double beta decay (0νDBD) of ^{130}Te, the ultra-low radioactive background, large exposure and projected stability on working conditions over several annual cycles make it suitable for a search for annual modulation in the dark matter (DM) detection rate, provided a low energy threshold is achieved. Encouraging results have been obtained with CUORE-like bolometers thanks to a new low-energy triggering method, resulting in a $\sim$3 keV energy threshold. In this talk, the status of the experiment, as well as the projected sensitivity to 0νDBD and DM annual modulation of CUORE-0 and CUORE, are presented.

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