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Cryogenic Underground TEST facility (CUTE) at SNOLAB

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A well shielded Cryogenic Underground TEST facility (CUTE) will be installed at SNOLAB with the goal to do performance tests, calibrations and background measurements with cryogenic dark matter detectors in support and preparation of the search for Weakly Interacting Massive Particles (WIMPs) with SuperCDMS at SNOLAB.

This facility will also offer the opportunity for the European Underground Rare Event Calorimeter Array (EURECA), a collaboration including the European cryogenic dark matter search experiments EDELWEISS and CRESST, to demonstrate the compatibility of their detector design with the SuperCDMS infrastructure. This in turn opens the door for bringing EURECA detectors as additional payload into SuperCDMS to increase the physics reach of the experiment.

The primary component of CUTE will be a cryogen-free dilution refrigerator mounted within a drywell in the centre of a water tank shielding. In addition, lead and polyethylene shielding will be installed in two phases to further reduce the radioactive background level at the detectors. Meanwhile, in order to minimise micro-phonics noise in the signal, special care will be taken to measure and suppress the level of micro-vibrations within the cryostat.

Author: ZHANG, Xiaohe (Queen's University)

Presenter: ZHANG, Xiaohe (Queen's University)

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