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# POS-33 - Vibration Analysis of a Dry Dilution Refrigerator at the Queen's SuperCDMS Test Facility

*Wednesday, 31 May 2017 18:31 (2 minutes)*

The Super Cryogenic Dark Matter Search (SuperCDMS) operates cryogenic detectors to search for a particle candidate constituting approximately 85% of the matter in the universe. The cryogenic system of the previous experimental setup at the underground laboratory in Soudan, Minnesota was shown to introduce vibrations that limited the sensitivity of the experiment. As a first step towards developing specifications for the maximum allowable level of vibrations in the next phase of SuperCDMS at SNOLAB, the dry dilution refrigerator of the detector test facility at Queen's University was equipped with a set of accelerometers to measure the transmission of vibrations. These measurements are used to validate a detailed finite element model of the system. These tools can be used by SuperCDMS in the future to better understand and minimize the impact of vibrations on the detector sensitivity.

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