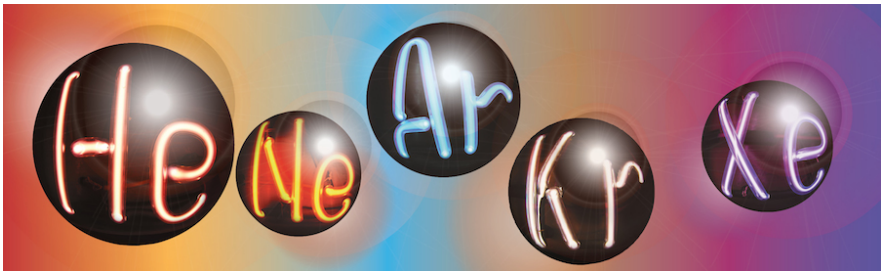

Contribution ID: **49** Type: **Presentation**

Prospects of the Carleton Cryogenic Facility

Sunday, 24 September 2017 12:25 (15 minutes)

In recent years, the interest in large liquid noble detectors, up to hundreds of tonnes in scale, has gained momentum. Such detectors would facilitate the required sensitivity for future low-background physics searches of interest such as dark-matter detection and the observation of neutrinoless double-beta decay. In order to achieve such sensitivity, R&D is essential. A new cryogenics facility at Carleton will allow for a range of table-top sized argon or xenon based measurements to address a series of requirements for future detectors. These include; background mitigation, optical response, the collection and detection of light and charge, and demonstrating the performance of novel silicon photomultiplier devices. The scope of the facility is discussed alongside recent results and knowledge gained from DEAP-3600, a current-generation liquid argon-based dark matter detector.

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Session Classification: Sunday Morning 2

Track Classification: Detector techniques (HV, cryogenics, purification, calibration, etc.)