Canadian Association of Physicists
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Contribution ID: **336** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) The stability of the DEAP-3600 dark matter detector and projected sensitivities for time-varying signals

Monday 7 June 2021 12:55 (10 minutes)

DEAP-3600 is a direct detection dark matter experiment with single-phase liquid argon as the target material to search for nuclear recoil signal from the interaction of WIMPs, one of the most widely accepted hypotheses for dark matter. Along with the occurrence of this elastic interaction of WIMP and target nuclei, theories also predict the dark matter signal could vary over the course of a year because of the rotation of the sun and hence the earth around the galactic center. This type of modulation is not expected in most of the known backgrounds and the observation of this type of modulation signal will extend the sensitivity of WIMP search in DEAP-3600. The detector stability of DEAP-3600 is studied which will lead to a measurement of the Ar39 half-life and annular modulation of the dark matter signal. In this talk, the sensitivity studies of the detector will be presented.

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