Canadian Association of Physicists

Association canadienne des physiciens et physiciennes

Contribution ID: **458** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) Background characterization and detector model after hardware upgrades of the DEAP-3600 detector

Thursday 10 June 2021 13:05 (10 minutes)

DEAP-3600 is a dark matter experiment which uses liquid argon to search for spin-independent interactions of weakly interacting massive particles (WIMPs). The experiment has completed two WIMP searches using 4.44 and 231 live days with 3322 kg and 3279 kg of liquid argon, respectively. In addition to these two data sets, the detector has recorded WIMP search data from 2016-2020 and analysis of this cumulative data set is currently underway.

Characterization and understanding of backgrounds capable of mimicking a WIMP signal are essential to completing any dark matter search. To further understand and distinguish several backgrounds identified in DEAP-3600 data, upgrades to the detector hardware have been designed and are scheduled to be completed by the end of 2021.

This talk will outline details of the DEAP-3600 hardware upgrades and present analysis of detector backgrounds using an upgraded detector model and Monte Carlo simulation.

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Session Classification: R2-8 Backgrounds and modelling for rare event searches (PPD) / Bruit et modélisation pour la recherche d'événements rares (PPD)

Track Classification: Particle Physics / Physique des particules (PPD)