

Recent Developments and Analysis in the DEAP-3600 Experiment

Friday, 14 February 2025 19:45 (15 minutes)

The latest results from the DEAP-3600 experiment will be presented. DEAP-3600 experiment is a direct dark matter search that employs single-phase liquid argon to detect potential dark matter interactions in the universe. Located 2 km underground at SNOLAB in Sudbury, Canada, the experiment uses a spherical acrylic vessel capable of holding 3600 kg of liquid argon. This vessel is monitored by photomultiplier tubes to detect scintillation light produced by rare nuclear recoil events, which may indicate interactions between dark matter particles and liquid argon nuclei. A key feature of the experiment is its ability to distinguish nuclear recoil signals from background electromagnetic interactions using the pulse shape discrimination technique. In recent years, the experiment has focused on key analyses, including dark matter searches and measurements of argon properties. Ongoing analyses include searches for solar axions, neutrino absorption, and WIMP candidates, and measurement of the muon flux at SNOLAB. Following recent hardware upgrades, DEAP-3600 is set to commence its third phase of data collection, spanning one year, starting in 2025.

Your Email

akhilmaru@cmail.carleton.ca

Affiliation

Carleton University

Supervisor

Simon Viel

Supervisor Email

simonviel@cunet.carleton.ca

Your current academic level

PhD student

Primary author: MARU, Akhil (Carleton University)

Presenter: MARU, Akhil (Carleton University)

Session Classification: Evening 2 - Dark Matter Searches

Track Classification: Dark Matter Searches