Results and the Background Model from DEAP-3600

The DEAP-3600 Collaboration recently released results describing an ultra-low background search for non-baryonic dark matter at SNOLAB, reaching a sensitivity of 3.9×10^{-45} cm² for a 100 GeV/c² WIMP mass. A background model was constructed, tuned on the sidebands, used to inform data-selection cuts, and used to predict rates in the region of interest for WIMP interactions $(0.62^{+0.31}_{-0.28}$ events in the 231-day exposure). The model includes leakage of electromagnetic events from pulse-shape discrimination; Cherenkov events; surface events with nuclear recoils or straggling alphas entering the argon; fast neutrons; and alpha decays in which only a fraction of the light enters the detector (so-called "neck events"). The background model will be discussed along with potential future improvements. Ideas of how the DEAP-3600 results informs larger liquid argon detectors will be presented.

 Authors:
 Dr JILLINGS, Chris (SNOLAB and Laurentian University); DEAP-3600 COLLABORATION

 Presenter:
 Dr JILLINGS, Chris (SNOLAB and Laurentian University)