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Energy response and position reconstruction at DEAP-3600

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DEAP-3600 is a liquid argon experiment for direct dark matter detection which is located 2km underground at the SNOLAB facility in Lively, Ontario. It was designed with a target sensitivity of 10^{-46}cm^2 for the spin-independent scattering cross section of Weakly Interacting Massive Particles (WIMPs) at masses of 100GeV on the nucleons of the scintillation material. Nuclear recoils from a WIMP signal can be distinguished from electronic recoils by pulse shape discrimination (PSD), utilising the decay times of the different excited states of the liquid argon following the interactions, reducing gamma backgrounds for the WIMP signals. Thus, the intrinsic backgrounds from the ^{39}Ar beta emitter contained within the liquid argon scintillator, as well as gamma signals originating from isotopes contained in the detector material, can be separated from the expected WIMP signal and used to understand the detectors energy response and position reconstruction in the region of interest. This talk will discuss the methods used to achieve a detailed understanding of the detector response with these non-WIMP signals.

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Session Classification: R1-5 Low Background Detectors (DIMP/PPD/DNP) | Détecteurs à faibles interférences (DPIM/PPD/DPN)

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