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Contribution ID: 3214 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) A method to understand the effects of pileup in the DEAP-3600 detector

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DEAP-3600 is a single-phase dark matter detector that uses liquid argon scintillation to search for spin-independent weakly interacting massive particles (WIMPs).

Identifying background events is vital in WIMP searches due to the extremely small WIMP-nucleon interaction probability. To precisely model backgrounds, pileup—multiple interactions happening in a single event—must be understood. Pileup can be studied using our periodic trigger—a 40 Hz, threshold-less trigger—which provides snapshots of what is occurring in the detector at random moments.

One method to study pileup in DEAP-3600 is by mixing the raw waveforms of periodic trigger events with physics events.

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