

Abstract Submitted
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Pulse shape discrimination in liquid argon W. HUGH LIPPINCOTT, Yale University, CLEAN/DEAP COLLABORATION — I present results from microCLEAN, a 4 kg liquid argon cell built as part of the CLEAN and DEAP programmes to detect dark matter in the form of WIMPs using scintillation light. The sensitivity of these detectors to dark matter is limited by the level of discrimination between electronic and nuclear recoils. Scintillation light is produced in the decay of metastable molecules that can exist in either the singlet or triplet state. Because the singlet state decays within a few nanoseconds while the triplet state has a lifetime of 1.6 microseconds, these components can be easily separated using timing information. Since electronic and nuclear recoils produce different ratios of singlet to triplet molecules, the relative size of the two components can determine what type of event occurred. I present two different discrimination algorithms, Prompt Fraction and Maximum Likelihood, and predict the discrimination power of larger detectors using these methods.

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