

LDMX: Clustering Electrons and Pions in the Hadronic Calorimeter

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LDMX is a direct detection experiment that searches for light dark matter (LDM), which is dark matter that resides in the sub-GeV mass range. LDM's existence is motivated by new dark sector particle models. In the future experiment, LDM is produced via dark bremsstrahlung, in which dark photons are radiated from electrons that collide with nuclei in a fixed target. Calorimetry is used to dismiss events in which ordinary particles are produced in the collision instead of dark matter. This fall, we developed a computer algorithm responsible for reconstructing the energies of particles that shower inside the hadronic calorimeter (HCal). To test the algorithm, we simulated events in which particles, such as electrons and charged pions, shower and deposit their energy inside the HCal. The algorithm performed well in clustering the showers of single electrons but struggled to accurately cluster the showers of charged pions.