

Construction and operation of a double phase pure Argon LEM-TPC

Saturday 23 January 2010 10:40 (20 minutes)

In this talk I will describe construction and operation of a 3 litre chamber based on the new concept of double phase pure argon Large Electron Multiplier Time Projection Chamber (LAr LEM-TPC): after drifting in liquid argon, the ionization electrons are extracted from the liquid to the vapour phase, where multiplication occurs due to high electric fields in the vicinity of the LEM holes. The multiplied electrons induce signals on two segmented collection electrodes allowing energy and position reconstruction of ionizing events. As I will show, cosmic muons have been used to monitor the liquid Argon purity and the gain achieved with a 1 mm thick LEM. We believe that this kind of tracking and calorimetric device finds its application in next generation neutrino physics and proton decay experiments as well as in direct Dark Matter search (ArDM).

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