

Ion Problem in Gaseous Detectors and Ongoing Ion Characterisation Studies

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In particular, ions affect the signal received from the detector by disrupting the electrical field configuration in some types of gas detectors (such as TPC's, Micromegas, Drift tubes). For this reason, scientists have tried various methods to eliminate these effects of ions, but it can not be said that any success yet. In recent years, our studies have shown that; we must characterize their transfer properties and the chemical processes that occur while drifting in the detector volume before actually attempting to develop methods to eliminate the ionic effect. Our studies have clearly shown that primary ions are forming ionic clusters in the nano-seconds. In addition to this fact, it is very important to determine the size of these cluster ions in order to characterize their effects on the signal. In addition to some of the theoretical calculations that we have done before, this talk includes an original experimental setup which we developed to measure the dimensions of the cluster ions by placing the detector (PMT) in the detector (GEM) and pre-results of the work.

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