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Detailed Characteristics of triple GEM detector for future experiments

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Gas Electron Multiplier (GEM) detector is one of the most advanced gas detector, being used in many high energy physics experiments. In future experiments like ALICE (run3) and CBM will use GEM detector as a readout to cope up with high rate particle production. In VECC, Kolkata a 10x10 cm^2 triple GEM detector is tested with different Argon based gas mixtures (Ar/CO_2 70:30 & 90:10). The detector is tested for spectrum study with different radioactive sources like ^{55}Fe, ^{106}Ru and Cosmic ray. A detailed characteristic of the detector in terms of effective gas gain, energy resolution, efficiency and time resolution have been studied. Efficiency measurements have been performed using both Cosmic ray and ^{106}Ru source and the efficiency ˜95% were obtained for both the cases. The uniform performance over the active area is expected in any detector. Here we have developed a method to study the uniformity. The gain and efficiency over the active area of the detector is uniform with an RMS variation are 8.8% and 1.9% respectively.

Presentation type

Oral

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