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Observation on the effect of prolonged irradiation on GEM detector

Gas Electron Multiplier (GEM) is a cutting edge detector technology that belongs to the group of Micro Pattern Gaseous detectors (MPGD). One of the key factors in selecting detectors for High Energy Physics (HEP) experiments is its long-term stable operation. One effective way to benchmark the stability of the chambers is to examine how well they perform under prolonged irradiation. A study has been carried out to investigate the stability in performance of a single mask triple GEM chamber prototype in terms of gain and energy resolution and count rate in the laboratory using a 5.9 keV ^{55}Fe X-ray source. The gain and energy resolution are corrected for the variation of ambient temperature/pressure ratio (T/p). The effect of the variation of bias current on the performance of the detector is also studied. The details of the experimental setup, methodology, and results will be presented.

Field of contribution

Experiment

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