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Performance Study for New Thicker GEM

We constructed a GEM chamber using new GEM foils, which are produced using a new etching method by a Japanese company. The new method has two steps (Plasma and Laser) to make holes in a flexible printed circuit board. Similar effective gas gain was obtained in a triple GEM chamber using new GEM foils, as compared with the standard CERN GEM. It is possible to make holes in thicker foils using the new etching method. New GEM foils with 100 μm thickness were produced in order to get higher gas gain with a single GEM foil. Obtained result shows the effective gas gain is much higher in the same electric field, as compared with double GEM chamber using two standard 50 μm GEM foils. Using new thicker GEM foils make the chamber structure simpler and it is promising to make chamber with a cylindrical shape in near future.

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