

# GEM foil characterization in cost-effective, and efficient way and attempt made to use it as an imaging detector

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Increasing demand for security scanners and medical imaging techniques has risen with the advancement of technology based on silicon sensors. However, these technologies are much expensive and require critical handling. The Gas Electron Multiplier (GEM) foil based detector has been attempted to use as an imaging detector. GEM foil is generally constructed using 50  $\mu\text{m}$  highly insulating film coated with 5  $\mu\text{m}$  copper on both sides and a network of highly dense double conical holes of size 50-70  $\mu\text{m}$  in it. Due to the microscopic structure of holes and the dependence of the electric field inside them, it becomes essential to study the defects and uniformity of holes along with the electrical property of foils in various conditions. In our work, we have tested GEM foils both optically and electrically and saw the response of the triple-layered GEM detector in various gas mixture ratio to study the best operating point along with stability and uniformity.

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No, this is an entirely new submission.

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