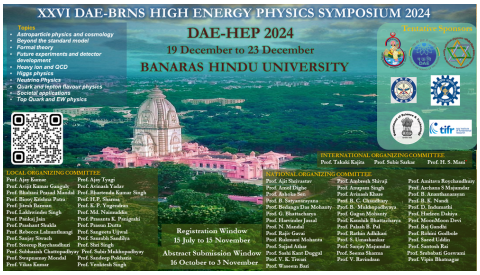

Contribution ID: **453** Type: **Oral**

Electric field studies in Gas Electron Multiplier using ANSYS

Micro-Pattern Gas Detectors (MPGDs) are a class of gaseous ionization detectors that involve microelectronics. In the gas-filled medium, anode and cathode electrodes are separated by a small space at large potential differences. Electrons and ions are produced when charged particles interact with the gas medium. With the avalanche mechanism, deflected electrons cause further ionization and the creation of electron-ion pairs. One type of MPGD is the Gas Electron Multiplier (GEM) utilized in High Energy Physics. GEM detectors consist of GEM foil, which is used to measure the momentum and position of particles in order to track them. It consists of two metal layers held at different potentials and a polyimide layer sandwiched between them. The foil's microscopic holes allow electrons to avalanche. The electrons are collected at the readout, where the signal is processed. GEM has been modelled using ANSYS electronics software to study the different configurations of GEM holes. The electric field is calculated in the detector region which plays an important role in the gain of detector. GEM is then modelled with Mechanical APDL(Ansys parametric design language) to further study the geometry in details. This study aims to achieve the best possible configuration of GEM foil to get optimal electric field, higher gain and lesser back-flow of ions without compromising the detector's capability.

Field of contribution

Experiment

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Track Classification: Future experiments and detector development