Contribution ID: 105

Type: Contributed Oral

Commissioning of a Pair of Commercial Gas Electron Multipliers (GEM) for the Position Calibration of HVMAPS Using Cosmic-Ray Muons

Friday, 16 February 2024 09:45 (15 minutes)

The High Voltage Monolithic Active Pixel Sensors (HVMAPS) will be used as electron detectors in The Measurement of a Lepton-Lepton Electroweak Reaction (MOLLER) experiment. The HVMAPS will map the response across the face of the quartz integrating detectors. Using two commercial GEM detectors, a position calibration system for the MOLLER's HVMAP was commisionned. The pair of of GEMs are aligned vertically with an HVMAP detector in between. Cosmic-ray muon tracks are identified using coincidence timing between the GEM detectors. From the track position and angle information, the HVMAP pixel by pixel efficiency and the overall position resolution can be determined. Each of the GEM detectors is filled with a gas mixture of Argon and Carbon Dioxide with a ratio of 80/20 at room temperature 293.15 K at 250 Torr. Finally, the muon-data position calibration is achieved by comparing measured spectra with detailed Monte Carlo simulations performed using GEANT4 and CRY codes. Preliminary results in this regard will be presented.

Your Email

cruzvena@myumanitoba.ca

Supervisor

Dr. Juliette Mammei

Supervisor Email

jmammei@physics.umanitoba.ca

Affiliation

University of Manitoba

Your current academic level,

MSc student

Primary author: Mr CRUZ VENEGAS, Noel Alberto (University of Manitoba)
Presenter: Mr CRUZ VENEGAS, Noel Alberto (University of Manitoba)
Session Classification: Morning 1 - Feb. 16, 2024