



Contribution ID: 239

Type: **Oral Presentation**

Performance of a Large-Area Triple-GEM Detector in a Particle Beam

Monday 13 June 2011 15:00 (20 minutes)

A multi-institutional collaboration is investigating the possibility of enhancing muon tracking and triggering capabilities in the small-angle region $1.6 < |\eta| < 2.1$ of the CMS experiment at the LHC by instrumenting the end-cap muon system with large-area GEM detectors. A first trapezoidal prototype triple-GEM detector of size $1\text{ m} \times 0.5\text{ m}$ was built and operated successfully in a test beam at CERN in October 2010. Front-end readout boards utilizing the “VFAT” chip are mounted in a regular array directly on the chambers. High voltage is provided by a compact divider board implemented with surface mount components. A tracker equipped with small GEM detectors was used to precisely measure the hit position in the large-area detector. A spatial resolution of $290\text{ }\mu\text{m}$ was measured in a region with average strip pitch of 1.1 mm , and $\sim 98\%$ hit efficiency was achieved at full operating voltage. Construction of two additional prototype chambers allowing faster timing and plans for testing these this summer in beams and with 3T magnetic field will be described.

Author: Prof. KARCHIN, Paul Edmund (Department of Physics and Astronomy-College of Science-Wayne Sta)

Presenter: Prof. KARCHIN, Paul Edmund (Department of Physics and Astronomy-College of Science-Wayne Sta)

Session Classification: Gaseous Detectors

Track Classification: Gaseous Detectors