Contribution ID: **49** Type: **Poster**

Study of the performance of Micromegas detectors in magnetic field.

Tuesday, October 13, 2015 4:25 PM (0 minutes)

Resistive Micromegas (Micro MEsh Gaseous Structure) detectors have been chosen by the ATLAS collaboration at LHC for the high luminosity upgrade due to their capability to maintain full efficiency and high spatial resolution at high rates. Operation in the Inner Muon Station of the high-rapidity region, the so called New Small Wheel (NSW) requires also these performances to be maintened in magnetic fields up to about 0.3 T.
The response of Micromegas chambers is affected by the magnetic field where the deflection of the drift electrons is described by the Lorentz angle, resulting in a bias in the reconstructed position.
Several test-beam campaigns have been performed to test the behaviour of small size resistive micromegas prototypes (10x10cm2) in magnetic fields up to 1 T using high momentum muon and hadron beams at CERN. These studies are performed in order to validate the capability to operate these chambers to get unbiased tracks in the NSW conditions.
Measurements of the Lorentz angle and drift velocity as a function of the magnetic field are presented and both are compared to expectations based on Garfield-Magboltz simulations. Several methods to correct the position bias are applied, based on the chamber configuration (the so called super-point method) or based on the knowledge of the local value of the magnetic field. The results of these studies are presented together with an overall discussion of the Micromegas tracking capability in magnetic field.

Primary author: BINI, Cesare (ROMA1)

Presenter: Dr SAMPSONIDIS, Dimos Sampsonidis (Aristotle University ofThessaloniki)

Session Classification: Poster session & coffee break

Track Classification: MPGD Detector Physics