Contribution ID: **262** Type: **poster**

Lorentz Angle Calibration for the CMS Pixel Detector

Monday, September 3, 2007 8:00 AM (20 minutes)

The CMS Pixel Detector is hosted inside the large solenoid generating a magnetic field of 4 T.
The electron-hole pairs produced by particles traversing the pixel sensors will thus experience the Lorentz force due to the combined presence of magnetic and electric field. This results in a systematic shift of the charge distribution. In order to achieve a high position resolution a correction for this shift, which can be up to 120μm, has to be applied. At start-up the Lorentz shift for a given bias voltage is well known from beam test studies. Due to irradiation the electric field in the sensors will change and thereby the Lorentz drift as well. Furthermore, since the irradiation will not be uniform across the detector, each sensor will be differently affected. Therefore, the effective Lorentz displacement will be regularly measured using data.

We present a strategy to extract this drift by comparing the cluster shapes of pixel hits in fully reconstructed tracks. The procedure measures the Lorentz displacement as function of the sensor depth and is developed using the CMS simulation and reconstruction software.

Submitted on behalf of Collaboration (ex, BaBar, ATLAS)

CMS

Primary authors: WILKE, Lotte (Universitat Zurich); SPEER, Thomas (Universitat Zurich); CHIOCHIA, Vincenzo (Universitat Zurich)

Presenter: CHIOCHIA, Vincenzo (Universitat Zurich)

Session Classification: Poster 1

Track Classification: Online Computing