

Measurement of Lorentz Angle for the CMS Pixel Detector

Monday, 10 June 2013 14:12 (18 minutes)

At the core of the CMS all-silicon tracking system is the silicon pixel detector, comprising three barrel layers and two pixel disks in the forward and backward regions, accounting for a total of 66 million channels. The pixel detector provides high-resolution 3D coordinates of the tracks produced in high energy pp collisions. Under the combined action of electric and magnetic fields, the charged carriers traversing the pixel sensors experience the Lorentz force. It causes charge sharing among neighboring pixels which is crucial in enhancing the spatial resolution. In the barrel pixels, the electric and magnetic fields are perpendicular resulting in maximum Lorentz drift, while, in the disks, the fields are oriented at 20 degrees resulting in much smaller Lorentz drift. We present the results of Lorentz angle measurement for the pixel detector using two independent methods.

Primary author: GODSHALK, Andrew (SUNY at Buffalo)

Co-authors: Dr KUMAR, Ashish (State University of New York at Buffalo); Dr KHARCHILAVA, Avto (SUNY at Buffalo)

Presenter: GODSHALK, Andrew (SUNY at Buffalo)

Session Classification: Session 1