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Test Beam Characterisation of passive CMOS Strip Sensors

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In high-energy physics, upgrades for particle detectors and studies on future particle detectors are largely based on silicon sensors as tracking devices. Consequently, there is a need to investigate silicon sensor concepts that offer large-area coverage and cost-efficiency.

Sensors based on the CMOS imaging technology present such an alternative silicon sensor concept for tracking detectors.

As this technology is a standardised industry process it can provide a lowered sensor cost, as well as access to fast and large-scale production from a variety of vendors.

The CMOS Strips project is investigating passive CMOS strip sensors fabricated by LFoundry in a 150nm technology.

By employing the technique of stitching two different strip formats of the sensor have been realised. Besides, the strip design varies in doping concentration and width of the strip implant to study various depletion concepts and electric field configurations.

The sensor performance is evaluated based on test beam measurements conducted at the DESY II test beam facility at DESY Hamburg.

This presentation will provide results of the test beam data analysis with the Corryvreckan software, as well as comparisons between irradiated and unirradiated strip sensors, concerning their hit detection efficiency.

Speed Talks

Normal

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