



Contribution ID: 9

Type: **not specified**

Simulation of CMOS Strip Sensors

Thursday 23 May 2024 12:10 (25 minutes)

In high-energy physics, there is a need to investigate silicon sensor concepts that offer large-area coverage and cost-efficiency.

Sensors based on the CMOS imaging technologies present an alternative silicon sensor concept for particle tracking detectors. As this technology is a standard-ised industry process, it can provide a lower sensor production cost and access to fast and large-scale production from various vendors.

The CMOS Strips project is investigating passive CMOS strip sensors fabricated by LFoundry in a 150 nm technology. By employing the technique of stitching, two different strip formats of the sensor have been realised. The implant design varies in doping concentration and width of the strip implant, making it possible to study various depletion concepts and electric field configurations.

Initial simulations of the strip sensor response were conducted using the Allpix2 framework. This study provides a first glimpse into the electric field within the sensor and its effect on generated charge carriers, based on TCAD device simulations. A comparison of different implant designs is made regarding their cluster size, which is then compared to data acquired at the DESY II test beam facility.

Will the talk be given in person or remotely?

In person

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Session Classification: Applications and studies

Track Classification: Applications & Studies