Contribution ID: **14** Type: **not specified**

Characterization of passive CMOS strip detectors

Friday 20 November 2020 13:40 (20 minutes)

An increasing trend towards full silicon trackers in future high energy physics experiments provokes the need to cover increasingly large areas with silicon detectors. As a consequence, detector designs that utilize cost-effective production processes are becoming more important. Employing CMOS production lines for sensors allows large and high-resistive wafers at low cost, making them a prime candidate.
In this talk we will present the first laboratory measurements of novel passive CMOS silicon strip sensors developed by the ATLAS Collaboration.
The study contains three different strip flavors fabricated on a 150 µm wafer by LFoundry on a 150 nm process. The strip sensors have a length of up to 4 cm, formed by stitching of individual elements.
The initial characterization of the sensors includes current-voltage, capacitance-voltage and interstrip capacitance measurements. Further measurements on the sensor performance include source measurements and characterization with different laser techniques.
A main focus of the study were position dependent measurements to achieve the main goal of understanding the impact of the stitching process employed on the functionality of the sensors.

Authors: RODRIGUEZ RODRIGUEZ, Arturo (Albert Ludwigs Universitaet Freiburg (DE)); SPERLICH, Dennis (Albert Ludwigs Universitaet Freiburg (DE)); GREGOR, Ingrid-Maria (DESY & Bonn University); HONIG, Jan Cedric (Albert Ludwigs Universitaet Freiburg (DE)); DIEHL, Leena (Albert Ludwigs Universitaet Freiburg (DE)); WIIK-FUCHS, Liv (Albert Ludwigs Universitaet Freiburg (DE)); HAUSER, Marc (Albert Ludwigs Universitaet Freiburg (DE)); BASELGA, Marta (Deutsches Elektronen-Synchrotron (DE)); SHARMA, Surabhi (Deutsches Elektronen-Synchrotron (DE)); WANG, Tianyang (University of Bonn (DE)); HEMPEREK, Tomasz (University of Bonn (DE)); PARZEFALL, Ulrich (Albert Ludwigs Universitaet Freiburg (DE))

Presenter: HONIG, Jan Cedric (Albert Ludwigs Universitaet Freiburg (DE))

Session Classification: CMOS