Passive CMOS Strip Sensors -characterisation, simulation and test beam results

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In the passive CMOS Strips Project, strip sensors were designed by a collaboration of German institutes and produced at LFoundry in 150 nm technology. Up to five individual reticules were connected by stitching at the foundry in order to obtain the typical strip lengths required for the LHC Phase-II upgrade of ATLAS or CMS trackers. The sensors were tested in a probe station and characterised with a Sr90-source as well as laser-based edge- and top-TCT systems. At last, detector modules were constructed from several sensors and thoroughly studied in a test beam campaign at DESY. All of these measurements were performed before and after irradiation. Sensors were also simulated using Sentaurus TCAD and the charge collection characteristics were studied using Allpix². This presentation will provide an overview of simulation results, summarize the laboratory measurements and present the test beam results for irradiated and unirradiated passive CMOS strip sensors.

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Authors: RODRIGUEZ RODRIGUEZ, Arturo; SARI, Birkan (TU Dortmund); SPERLICH, Dennis (Albert Ludwigs Universitaet Freiburg (DE)); HUEGGING, Fabian (University of Bonn (DE)); LEX, Fabian Simon (Albert Ludwigs Universitaet Freiburg (DE)); GREGOR, Ingrid-Maria (DESY & Bonn University); ZATOCILOVA, Iveta (Albert Ludwigs Universitaet Freiburg (DE)); ARLING, Jan-Hendrik (Deutsches Elektronen-Synchrotron (DE)); WEIN-GARTEN, Jens (Technische Universitaet Dortmund (DE)); DINGFELDER, Jochen Christian (University of Bonn (DE)); JAKOBS, Karl (Albert Ludwigs Universitaet Freiburg (DE)); KROENINGER, Kevin Alexander (Technische Universitaet Dortmund (DE)); DIEHL, Leena (CERN); HAUSER, Marc (Albert Ludwigs Universitaet Freiburg (DE)); BASELGA, Marta (Technische Universitaet Dortmund (DE)); KARAGOUNIS, Michael (Fachhochschule Dortmund Univ. of Applied Sciences and Arts (DE)); DAVIS, Naomi Afiriyie (Deutsches Elektronen-Synchrotron (DE)); SORGENFREI, Niels (Albert Ludwigs Universitaet Freiburg (DE)); KOPPENHÖFER, Roland (Albert Ludwigs Universitaet Freiburg (DE)); KOPPENHÖFER, Roland (Albert Ludwigs Universitaet Freiburg (DE)); WANG, Tianjang (University of Bonn); HEMPEREK, Tomasz (University of Bonn (DE)); PARZEFALL, Ulrich (Albert Ludwigs Universitaet Freiburg (DE));

Presenter: ZATOCILOVA, Iveta (Albert Ludwigs Universitaet Freiburg (DE))

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