

CMOS Strip Sensors – Characterisation, Simulation and Test Beam Results

Thursday 5 December 2024 15:00 (20 minutes)

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. We provide an overview of simulation results, summarize the laboratory measurements and present the test beam results for irradiated and unirradiated passive CMOS strip sensors.

Type of presentation (in-person/online)

in-person presentation

Type of presentation (I. scientific results or II. project proposal)

I. Presentation on scientific results

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

Presenter: ZATOCILOVA, Iveta (University of Freiburg (DE))

Session Classification: WG1 - CMOS technologies