



Contribution ID: 183

Type: ORAL

Silicon as Pixel Sensor Material at Extreme Fluences up to 10^{17} n/cm²

Thursday, 4 September 2014 15:00 (25 minutes)

Raising the electric field so as to provoke charge multiplication of electrons has enabled silicon to provide measurable signals from sensors irradiated to unprecedented radiation levels up to 1.6×10^{17} n_{eq}/cm², making it a contender also for HL-LHC very forward tracking and calorimeters. A simple scaling of collected charge vs. applied bias has been established experimentally for fluences above 10^{15} n_{eq}/cm² for planar strip sensors. Field investigations by edge-TCT have been carried out to 10^{16} , 10^{17} is in the planning. Distinct features as a SCR and ENB with a sizable electric field were observed. Leakage current generation seems confined to the SCR, therefore the observed departure from linear scaling of leakage current vs. fluence at fixed voltage is not surprising. While experimental results are obtained with strip detectors, their scaling to pixel geometry will be discussed, and expected differences pointed out.

Primary author: MIKUZ, Marko (Jozef Stefan Institute (SI))

Co-authors: KRAMBERGER, Gregor (Jozef Stefan Institute (SI)); MANDIC, Igor (Jozef Stefan Institute (SI)); ZAVRTANIK, Marko (Jozef Stefan Institute (SI)); CINDRO, Vladimir (Jozef Stefan Institute (SI))

Presenter: MIKUZ, Marko (Jozef Stefan Institute (SI))

Session Classification: Cooling, Interconnections, Radiation Tolerance