

First measurements with planar pixel detectors after SLHC fluences

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ATLAS SingleChip-Assemblies based on the FE-I3 readout chip have been irradiated with reactor neutrons in Ljubljana to fluences up to $2E16$ neq/cm². First measurements obtained with a Sr-90 source in the lab will be presented. The collected charge will also be compared to preliminary testbeam results.

Summary

In the coming years, LHC will be upgraded step by step to reach a total integrated luminosity of few thousand inverse femtobarns. The experiments at LHC are also planning upgrades, among them replacements of their pixel detectors.

ATLAS will follow a two-step strategy with the installation of a new insertable b-layer (IBL) in 2016 with a radius of only 32 mm from the beam. Planar, 3D and diamond sensors are under consideration as IBL sensors; sufficient radiation hardness for a fluence of $5E15$ neq/cm² was specified. The pixel sensors for the innermost layer at SLHC will even have to withstand up to $2E16$ neq/cm².

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Furthermore, a brief status update on the irradiation and testbeam measurements of samples from the “common RD50/PPS” and the “thin n-bulk PPS” productions with CiS will be given.

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