Contribution ID: **26** Type: **not specified**

The upgrade of the ALICE Inner Tracking System

Thursday, July 4, 2013 12:35 PM (25 minutes)

The upgrade of the ALICE apparatus, particular the installation of an upgraded Inner Tracking System (ITS) is under development. The upgrade strategy is formulated under the assumption that, after the second long shutdown in 2018, the LHC will progressively increase its luminosity with Pb beams eventually reaching an interaction rate of about 50 kHz, i.e. instantaneous luminosities of L = 6 × 1027 cm−2s−1.
The new ITS will consist in seven layers of silicon detectors starting at 2.2 cm radial distance from the interaction region. The use of Monolithic Active Pixel Sensors (MAPS) will allow the silicon material budget per layer to be reduced by a factor of 7 in comparison to the present ITS (50 μm instead of 350 μm), possibly reaching the goal of 0.3% radiation length for each of the three inner layers. The Upgraded ITS will have greatly improved performances in terms of determination of the distance of closest approach to the primary vertex, of standalone tracking efficiency at low pT, of momentum resolution and of readout capabilities. In this talk a description of the different technologies considered for the new ITS and the detector layout will be presented.

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