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The ALICE Silicon Tracker Upgrade

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The long-term physics program of the ALICE experiment at the CERN LHC relies on a major upgrade of the central barrel detectors planned for the second long LHC shutdown (LS2) that as of today is scheduled for 2017/18. A key aspect of the global upgrade strategy is to develop the capability to collect Pb-Pb data at an interaction rate up to 50 kHz, with the least possible bias, and improved performance in terms of secondary vertex reconstruction. The upgrade of the existing silicon Inner Tracking System (ITS) is a fundamental cornerstone of this upgrade plan, which will allow to access new measurements on the charm and beauty production. The baseline idea is to build an entirely new ALICE Silicon Tracker (AST) to replace the existing ITS. The AST will be based on 7 silicon layers: three inner layers of pixel detectors followed by four outer layers of pixel or double-sided microstrip detectors.

This contribution will present the on going studies and developments of the AST. The layout options and the technical features that are being evaluated for the AST will be described. The effects of the radial position, material budget and segmentation of the layers on the performance of the AST in terms of impact parameter resolution, standalone tracking efficiency, momentum resolution and readout rate capabilities will be discussed.

for the collaboration

ALICE

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