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ALICE ITS2: overview and performance

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The upgraded Inner Tracking System (ITS2) is instrumental for tracking and vertex reconstruction in the ALICE experiment. The new tracker consists of seven cylindrical layers equipped with silicon Monolithic Active Pixel Sensors (MAPS) with a pixel size of 27 by 29 μm . The sensors are thinned down to a thickness of 50 μm and 100 μm for the three innermost layers and for the four outer layers, respectively. The material budget of the innermost layers is as low as 0.36% X_0 /layer compared to 1.14% X_0 /layer of the previous ITS1. In combination with a radius of 23 mm for the innermost layer and a position resolution of about 5 μm , the low material budget greatly enhances the reconstruction capabilities of heavy-flavour and low-pT particles compared to Run 2.

ITS2 has been in operation since the beginning of Run 3 and has already recorded more than 42 pb^{-1} proton-proton events at $\sqrt{s} = 13.6$ TeV and more than 2 nb^{-1} PbPb events at $\sqrt{s_{\text{NN}}} = 5.36$ TeV, operating stably during these operations at interaction rate up to 4 MHz in pp and about 50 kHz in Pb-Pb collisions. This contribution will review the detector performance during LHC Run 3 and give an overview on the calibration methods and running experience.

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