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Results of the new MAPS-based ALICE inner tracker operation in the LHC Run 3

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As part of a major upgrade of the ALICE experiment at the Large Hadron Collider (LHC) during Long Shutdown 2, several new detectors have been installed together with new online and offline computing systems and the modification of detectors readout. A key detector of such upgrade is the new, ultra-light, high-resolution Inner Tracking System (ITS2) that significantly enhances the resolution on the determination of the distance of closest approach to the primary vertex, the tracking efficiency at low transverse momenta, and the read-out rate capabilities with respect to what was achieved in the LHC Run 2.
The new tracker consists of seven layers, azimuthally segmented into Staves, equipped with silicon Monolithic Active Pixel Sensors with a pixel size of 27×29 μm^2 and flexible printed circuits with unprecedented specifications in terms of material thickness and spatial resolution: 50 μm sensors for the three innermost layers, and 100 μm ones
for the outer layers with an in-chip spatial resolution of about 5 μm. A first layer with a radius of 23 mm, makes this detector the closest to the interaction point in a barrel configuration. In addition, with a total sensitive area of about 10 m^2 it represents the largest scale application of the MAPS technology in a HEP experiment and the first ever built at the LHC.
The LHC Run 3 started in July 2022 with proton-proton collisions at a centre-of-mass energy of 13.6 TeV, and more than 250 billion events have been collected at an interaction rate of 500 kHz, which is five times larger than Run 2. During standard operations, the detector is characterized by a stable spurious hit rate of about 10^{-8} hits/event/pixel and an impact parameter resolution of about 40 μm at a transverse momentum of 500 MeV/c, in agreement with Monte Carlo simulations.
This contribution will show the long effort which allowed the construction, characterization, installation and commissioning of the new tracking system with the focus on the detector performance results coming from proton-proton collisions of the LHC Run 3.

Your name

Ivan Ravasenga

Institute

CERN

Email address

ivan.ravasenga@cern.ch

Author: RAVASENGA, Ivan (CERN)

Presenter: RAVASENGA, Ivan (CERN)

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