Contribution ID: **8** Type: **Poster**

P1.11: First Results of the Upgraded ALICE Inner Tracking System in LHC Run 3

Monday, 26 June 2023 14:56 (1 minute)

Major upgrades of the ALICE experiment at CERN were completed during the LHC Long Shutdown 2 (2019-2021). The ALICE detector is currently taking data and has been doing so from the start of the third period of operation of the LHC (Run 3) on July 5th, 2022. One key part of these upgrades is the new Inner Tracking System (ITS2), a full silicon-pixel vertexing and tracking detector constructed entirely with CMOS monolithic active pixel sensors (ALPIDE). The ITS2 consists of three inner layers (50 µm thick sensors) and four outer layers (100 µm thick sensors) covering 10 m2 and containing 12.5 billion pixels with a pixel pitch of 27 µm x 29 µm. It offers a significant improvement in impact-parameter resolution and tracking efficiency, thanks to the increased granularity, the very low material budget (0.35% X0/layer in the inner barrel) as well as a smaller beam pipe radius.

The ITS2 was successfully installed in the ALICE experiment in May 2021, followed by a period of comprehensive on-site commissioning, before starting data taking in July 2022. In this talk, the detector construction and commissioning will be introduced briefly. The performance results from the first phase of proton-proton collisions recorded to date in LHC Run 3 will be discussed in detail, which include detector calibration, long-term evolution of the ALPIDE sensor threshold and noise, a first measurement of the detection efficiency and pointing resolution.

Primary author: LIU, Jian (University of Liverpool (GB))

Presenter: LIU, Jian (University of Liverpool (GB))

Session Classification: Poster (incl. coffee)