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Commissioning of the upgraded ALICE Inner Tracking System

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Svetlana Kushpil on behalf of the ALICE Collaboration

The ALICE Inner Tracking System detector is undergoing a major upgrade in order to cope with the increased data rates and to meet the requirements as set out by the physics goals of the experiment after Long Shutdown 2. The new ITS will be completely made up of monolithic active pixel sensors based on a CMOS 180nm process. A single sensor measures 15mm x 30mm and contains half a million pixels distributed over 512 rows and 1024 columns. These 50um thick sensors, with 27um x 29um pixel pitch, are mounted on ultra-lightweight carbon composite support structures with an embedded cooling system. This results in a considerable reduction of the material budget (down to 0.35% X_0 for the inner layers and ~1% X_0 for the outer layers) and a significant improvement of the impact parameter resolution and tracking efficiency. The innermost ITS layer will be moved as close as 23mm to the interaction point. The integration of the ITS detector assembly, made of the three innermost and four outermost layers, has been almost completed and the commissioning, first in the laboratory, is ongoing. The detector will be installed in ALICE in 2020. This talk will give a brief overview of the motivation for the upgrade and will present the first results of the detector performance obtained during the commissioning.

Submission declaration

Original and unpublished

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