

Strangeness in Quark Matter 2019



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ALICE ITS upgrade: construction and commissioning

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ALICE (A Large Ion Collider Experiment) is the CERN LHC experiment optimized for the study of the strongly interacting matter produced in heavy-ion collisions and devoted to the characterization of the quark-gluon plasma. Data were collected during LHC Run 1 and Run 2 in lead-lead, proton-lead and proton-proton collisions at several energies.

To achieve the physics program for LHC Run 3, ALICE foresees a major upgrade of the experimental apparatus during the ongoing second long LHC shutdown.

A key element of the ALICE upgrade is the substitution of the present Inner Tracking System (ITS) with a completely new silicon based detector whose features will allow the reconstruction of rare physics channels, not accessible with the present layout. The enabling technology for such performance boost is the adoption of custom-designed Monolithic Active Pixel Sensors (MAPS) as detecting element. The high pixel density, a seven-layer layout covering a radial extension from 22 mm to 430 mm and a very low material budget (0.3% X_0 for the three innermost layers), will significantly enhance the precision of the position determination of the particle decay vertexes and the tracking efficiency, especially for low transverse momenta particles.

The integration of the Inner Barrel, made of the three innermost layers, has been completed and the commissioning, first in laboratory, is ongoing. The construction of the Outer Barrel, the four outermost layers, is ongoing and their integration in the detector structure is proceeding in parallel.

In this talk, an overview of the physical motivation and layout as well as the status of the construction and commissioning of the detector will be given.

Collaboration name

ALICE Collaboration

Track

Upgrades and new experiments

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