

ALICE ITS upgrade

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A Large Ion Collider Experiment (ALICE) at the Large Hadron Collider (LHC) at CERN will undergo a major upgrade during the 2nd LHC Long Shutdown (LS2) scheduled in 2019-20 that will allow to study in detail Quark-Gluon Plasma (QGP) properties exploiting the increased Pb-Pb luminosity expected during Run 3 and Run 4. The replacement of the existing Inner Tracking System (ITS) with a completely new ultra-light high-resolution detector is one of the cornerstones within this upgrade program. The new ITS will consist of seven layers of an innovative Monolithic Active Pixel Sensors (MAPS) with the innermost layers sitting at only 22 mm from the interaction point. It is made of seven concentric detector layers based on a 50 μm thick MAPS chip (called ALPIDE) with a pixel pitch of $27 \times 29 \mu\text{m}$. The upgraded ITS will be realized using more than twenty-four thousand ALPIDE chips covering a total active surface of about ten square meters. The main features of the new ITS are of low material budget, high granularity and low power consumption. This talk will focus on the design and the physics performance of the new ITS, as well as the advanced techniques adopted in detector assembly and integration will be introduced. The status and commissioning of the ITS upgrade project will be reported.

Abstract Type

Talk

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