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Type: Talk

The Next Upgrade of the ALICE Inner Tracking System: ITS3

Tuesday 27 August 2024 16:00 (20 minutes)

The ALICE experiment, optimized to study the collisions of nuclei at the ultra-relativistic energies provided by the Large Hadron Collider (LHC), is approaching a new upgrade phase, foreseen during the third Long Shutdown (LS3) of the accelerator (2026-2028). This upgrade includes the replacement of the 3 innermost layers of the current Inner Tracking System (ITS), the detector closest to the interaction point, which is made of 7 layers of Monolithic Active Pixels (MAPS). The new vertex detector, named ITS3, will be made of newly developed wafer-scale monolithic pixel sensors in a 65 nm CMOS technology, thinned down to 50 μm , bent into truly cylindrical layers and held in place by light mechanics made from carbon foam. Thanks to these features, the ITS3 will achieve unprecedentedly low values of material budget (only 0.07% \times 0 per layer) and closeness to the interaction point (19 mm). As a consequence, the tracking performance, especially at low transverse momenta (~ 0.1 GeV/c), will be improved. This contribution will review the ALICE ITS3 detector concept and will cover the R&D activity, from the development of the sensor to the mechanics, cooling, and integration. Particular attention will be given to the results on the sensor characterization of small test devices (Multi-Layer Reticle 1 submission) and wafer-scale sensor sensors (Engineering Run 1) from beam tests and laboratory setup.

Internet talk

Yes

Is this an abstract from experimental collaboration?

Yes

Name of experiment and experimental site

ALICE Collaboration <https://alice-collaboration.web.cern.ch/>

Is the speaker for that presentation defined?

Yes

Details

Francesco Barile, Università e INFN, Bari (IT), <https://www.uniba.it/it/docenti/barile-francesco>

Authors: BARILE, Francesco (Università e INFN, Bari (IT)); BARILE, Francesco (Università degli Studi di Bari & INFN)

Presenter: BARILE, Francesco (Università e INFN, Bari (IT))

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