

The novel, truly cylindrical, ultra-thin silicon detector for the ALICE Inner Tracker System

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ALICE is planning to replace its innermost tracking layers during LHC Long Shutdown 3 with a novel detector that will be as close as 18 mm to the interaction point and as thin as $<0.05\%$ X_0 per layer. To achieve these figures, a wafer-scale Monolithic Active Pixel Sensor in 65 nm technology is being developed. This sensor, fabricated on 300 mm wafers, will reach dimensions of up to 280 by 94 mm. They are subsequently thinned down to values between 20-40 μm , where they become flexible and are bent into truly cylindrical half-barrels. The ALICE collaboration has recently published a Letter of Intent, based on which the Large Hadron Collider Committee endorsed the R&D programme towards a Technical Design Report.

This contribution will review the detector concept, the physics motivations, and lays out the R&D path. Most importantly, results from the tests with bent sensors will be presented for the first time.

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