

# Heavy Flavour measurements in Pb–Pb collisions with the upgraded ALICE Inner Tracking System

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In future LHC runs the heavy flavour measurements in Pb–Pb collisions will enable precise studies of the Quark Gluon Plasma (QGP) transport properties. In the scope of this direction, after the major upgrade of the ALICE Inner Tracking System (ITS2) with seven layers of CMOS Monolithic Active Pixel Sensors (MAPS), a further upgrade, the ITS3, is planned for the third LHC Shutdown (LS3). Ongoing developments allow designing wafer scale silicon sensors which can be curved owing to the flexible nature of silicon when thinned below 40-50  $\mu\text{m}$ . The three innermost layers of the ITS2 will be replaced by three cylindrical single chip ultra light silicon wafers which will surround the beam pipe. The inner radius and the thickness of the beam pipe will be reduced allowing the first detection layer to approach the collision point. The significant reduction of material budget, down to 0.05%  $X_0$  per layer, along with other design modifications will improve the detection capabilities and boost the ALICE physics program focusing on the measurements of low mass and low momentum particles. Monte Carlo simulations of a simplified ITS3 geometry within the ITS2 design indicate an improvement in the impact parameter resolution and the tracking efficiency. The measurements of charm and beauty which will benefit from these improvements will be the subject of this contribution. The significance of measuring the  $\Lambda_b$  particle, decaying to a  $\Lambda_c$  and a  $\pi$ , a decay channel with low branching ratio and large combinatorial background is one of the studies on heavy flavour particles which reflects the substantially improved performance of the next ALICE tracker.

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