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## Performance for the reconstruction of $\Lambda_b$ baryons with the ALICE inner tracker upgrade

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The ALICE detector is designed to investigate the properties of the hot and dense plasma of quarks and gluons, formed at the extreme energy densities reached in Pb-Pb collisions at the LHC.

Heavy quarks are sensitive probes of this medium, because they are produced at the initial stage of the collision and they subsequently interact with the medium itself.

In particular, an accurate measurement of heavy flavour production provides information on fundamental properties of the medium, like the transport coefficients and the thermalization and the hadronization mechanisms.

Interesting results have been obtained in the first three years of data-taking at the LHC, but there are still open questions, which would require measurements beyond the present capabilities of the ALICE apparatus.

Among the completely unexplored fields, the measurement of the production of the heavy flavour baryons, like  $\Lambda_c$  and  $\Lambda_b$ , can bring insight on the heavy quark hadronization mechanism in the presence of a partonic medium.

These measurements are not accessible in Pb-Pb collisions with the present ALICE apparatus and LHC luminosity.

The ALICE upgrade planned for the second Long Shutdown in 2019 includes a new Inner Tracking System, with three times better tracking precision. In addition, a faster readout for most of the detectors will permit to fully exploit the increased Pb-Pb interaction rate of up to 50 kHz.

In this poster we present the performance for the full reconstruction of the beauty baryon

$\Lambda_b^0 \rightarrow \Lambda_c^+ + \pi^-$  decays (with  $\Lambda_c^+ \rightarrow pK^-\pi^+$ )

in central Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.5$  TeV.

The statistical significance of the measurement will be given for the target integrated luminosity of  $10 \text{ nb}^{-1}$ .

### On behalf of collaboration:

ALICE

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