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Measurement of the hypertriton properties and production with ALICE

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The ${}^3_{\Lambda}\text{H}$ is a bound state of proton (p), neutron (n) and Λ . Studying its characteristics provides insights about the strong interaction between the Λ and ordinary nucleons. In particular, the ${}^3_{\Lambda}\text{H}$ is an extremely loosely bound object, with a large wavefunction. As a consequence, the measured (anti-) ${}^3_{\Lambda}\text{H}$ production yields in pp and p-Pb collisions are extremely sensitive to the nucleosynthesis models. Thanks to the very large set of pp, p-Pb and Pb-Pb collisions collected during Run 2 of the LHC the ALICE collaboration has performed systematic studies on the ${}^3_{\Lambda}\text{H}$ lifetime, binding energy and production across different collision systems. The new ALICE results on hypertriton properties have a precision which is comparable with the current world averages and they can be used to constrain the state-of-the-art calculations which describe the ${}^3_{\Lambda}\text{H}$ internal structure. Furthermore, with the precision of the presented production measurements some configurations of the Statistical Hadronisation and Coalescence models can be excluded leading to tighter constraints to available theoretical models.

In-person participation

Yes

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