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Prospects for light (anti)nuclei measurements in jets in Run 3 with ALICE

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The production of light (anti)nuclei in high-energy hadronic collisions has been studied in depth with the ALICE experiment at the LHC. Despite this, the production mechanism of light (anti)nuclei is still not well understood and remains a highly-discussed topic in the scientific community. One of the phenomenological models typically used to describe the hadronization process is the coalescence model. In this model, if the nucleons at kinetic freezeout are close in phase space and match their spin state they can bind and form a nucleus. More advanced coalescence model uses the Wigner formalism for the bound state. A prediction of this model is an enhanced coalescence probability of nuclei in jets with respect to the underlying event in small collision systems. To test this prediction, ALICE has published a work where the (anti)deuteron coalescence parameter in and out of jets is measured in pp collisions, and the same study has been performed in p-Pb collisions, observing in both cases such enhancement. In this poster, the prospects for light (anti)nuclei measurements in jets and in underlying event during the Run 3 will be presented, considering the developments along this research line and the expected precision obtained thanks to the integrated luminosity that will be collected.

Category

Experiment

Collaboration (if applicable)

ALICE Collaboration

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