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Constraining the production mechanism of light (anti-)nuclei in small systems with ALICE at the LHC

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The large samples of high-quality data taken in pp collisions at $\sqrt{s} = 5$, 7 and 13 TeV and in p-Pb collisions at $\sqrt{s_{\rm NN}}$ = 5.02 TeV at the LHC with the ALICE detector allows a systematic study of light (anti-)nuclei production to be performed in these collision systems. The excellent performance of the Inner Tracking System, Time-Projection Chamber and Time-Of-Flight detectors provide a clear identification and separation of primary produced light (anti-)nuclei from secondaries. Additionally, the high-energy deposit of Z=2 particles in the Transition Radiation Detector has been exploited to collect a hardware-triggered data sample in the high-interaction rate pp collision at $\sqrt{s} = 13$ TeV and p-Pb collisions at $\sqrt{s_{\rm NN}}$ = 8.16 TeV. New results on deuteron production as a function of multiplicity in pp and p-Pb collisions will be presented, as well as the measurement of ^{3}He in (triggered) p-Pb collisions. The goal is to study whether (anti-)nuclei production in small systems is better described by the coalescence model or by the statistical hadronisation model. The coalescence parameter B_A is studied as a function of transverse momentum in the different systems and as a function of the event multiplicity. In addition, the measurement of the (anti-)deuteron production in jets will be presented and compared with theoretical models.

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