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Understanding hadronization through measurements of light-flavor hadron production with ALICE

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Light-flavor hadrons constitute the bulk of particle production in ultrarelativistic hadron-hadron collisions at the LHC. The measurements of the production of such particles are relevant to investigate the microscopic production mechanism of hadrons and to study collective effects in small collision systems. Among the light-flavor particles stemming from the hadronic collisions occurring at the LHC, light (anti)(hyper)nuclei are also produced. Recent results on the production of (anti)nuclei conducted within the ALICE Collaboration, up to A=4, are shown in this contribution. Production measurements in small collision systems are combined with femtoscopic measurements of the emitting source size, and discussed in this contribution in the context of nucleosynthesis models.
Further insights into the hadronization process can be obtained by investigating the production of exotic bound states, such as hypernuclei (multi-baryon states with hyperons). In particular, the study of the production and properties of the hypertriton provides insights into the strong hyperon-nucleon interaction, which has important implications for astrophysics. Indeed, detailed knowledge of the strong interaction between hyperons and nucleons is fundamental to constraining the equation of state of high-density baryonic matter, which will allow a better understanding of the internal structure of neutron stars.

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