

Review of (anti-)(hyper-)Nuclei Production and Search for Exotic Baryon States with ALICE at the LHC

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In ultra-relativistic collisions at the Large Hadron Collider (LHC) light (anti-)(hyper-)nuclei are produced with significant yields, especially in collisions between lead nuclei. In addition, these collisions give the possibility to search for light exotic bound states of baryons. Light nuclei are identified using the excellent particle identification capabilities of the Time Projection Chamber (TPC) and the Time-Of-Flight (TOF) detector of the ALICE experiment.

Transverse-momentum spectra and production yields of light composite objects such as (anti-)nuclei and the (anti-)(hyper)triton will be presented. To understand their production mechanism the comparison of the results obtained for the three collision systems, pp, p-Pb and Pb-Pb and at different energies will be discussed. They are then compared with predictions from thermal and coalescence models. In addition, we will present results from searches for weakly-decaying light exotic states, such as the Lambda-Lambda (H-dibaryon) and the Lambda-neutron bound states.

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