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Measurement of anti- and hyper-matter production with the ALICE experiment

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The unprecedented high collision energies at the Large Hadron Collider give rise to a significant production of light anti- and hyper-nuclei in proton-proton and, even more, in Pb-Pb collisions. With its excellent particle identification capabilities based on the specific energy loss (dE/dx) in the Time Projection Chamber and time-of-flight measurements, the ALICE experiment is very well suited for the detection of these rare stable particles. Results for (anti)deuterons, (anti)tritons, (anti-) ^3He and (anti-) ^4He will be presented. With the help of the Inner Tracking System, secondary (anti-)nuclei originating from the decays of light (anti-)hyper- nuclei can be clearly separated from primary particles. This allows not only for the topological identification of the hyper-triton via its mesonic decay ($^3_{\Lambda}\text{H} \rightarrow ^3\text{He} + \text{pion}$), but also for the search for even lighter hyper- matter systems, i.e. Λ - Λ and Λ -neutron bound states. The results will also be compared with the expectations from thermal and coalescence models.

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