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Search for exotic hyper-matter and measurement of nuclei with ALICE at the LHC

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The high collision energies reached at the LHC lead to significant production yields of light anti-nuclei and hyper-matter in proton-proton and, in particular, Pb-Pb collisions. The excellent particle identification capabilities of the ALICE apparatus, based on the specific energy loss in the Time Projection Chamber and time-of-flight measurement, allow for the detection of these rarely produced particles. Further the Inner Tracking System gives the possibility to separate primary nuclei from those coming from the decay of heavier systems. This offers the unique opportunity to search for exotica like the bound state of a Lambda and a neutron which would decay into deuteron and pion, or the bound states of two Lambda's.

The results of these searches will be compared to the production of light (anti-)nuclei and with the expectations from thermal and coalescence models.

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