

# (Anti-)matter and hyper-matter production at the LHC with ALICE

*Monday, 3 December 2012 15:00 (30 minutes)*

ALICE is the experiment at the CERN LHC dedicated to the investigation of nucleus–nucleus collisions at the highest energies ever reached in the laboratory. The excellent particle identification capabilities of ALICE allow for the reconstruction of a significant number of rare states or even exotic ones. In this talk we present results from a sample of Pb–Pb collisions at a center of mass energy of  $\sqrt{s_{NN}} = 2.76$  TeV per nucleon–nucleon pair. Light nuclei up to  ${}^3\text{He}$  and  ${}^4\text{He}$  as well as the corresponding anti-nuclei have been identified based on their specific energy loss in the Time Projection Chamber and velocity information from the Time-Of-Flight detector. (Anti-)hyper-tritons have been reconstructed via their mesonic decay ( ${}^3\Lambda\text{H} \rightarrow {}^3\text{He} + \pi$ ) exploiting their secondary vertex decay topology. The ( ${}^3\text{He}$ ,  $\pi$ ) invariant mass spectrum will be presented. In addition, searches for even lighter hyper-matter states, i.e.  $\Lambda\bar{\Lambda}$  (also known as H-Dibaryon) and  $\Lambda$ -n bound states, will be discussed. The results will be compared with model expectations.

## Presentation Type

Invited Talk

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