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Preliminary study of the (anti-)deuteron absorption in the detector material of ALICE at the LHC

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The interaction cross section of nuclei and anti-nuclei with matter is not well known in the momentum region from about 3 GeV/c down to about 0.7 GeV/c. The determination of this cross section will be of crucial importance for the precise measurement of the (anti-)nuclei production in pp, p-Pb and Pb-Pb collisions at the LHC because this lack of information is presently the biggest source of systematic uncertainties. As a matter of fact, different transport codes used for the data and MC reconstruction reproduce different tracking efficiencies for (anti-)nuclei. In this poster, a preliminary study of the (anti-)deuteron absorption in the detector material of ALICE will be presented, exploiting the fact that, during the Run 1 data taking, few modules of the Transition Radiation Detector (TRD) were not yet installed, leaving empty spaces between the Time Projection Chamber and the Time-Of-Flight Detector, in a portion of the azimuthal acceptance.

A first analysis of the effect due to the presence of the additional material of the TRD will be performed, based on the p-Pb data sample. The ratio between the spectra of deuterons passing through the TRD and those passing in the regions where the TRD was not installed is determined. The choice of the p-Pb data sample with respect to Pb-Pb collisions will help in limiting the background due to the secondary deuteron contamination. Possible improvements in such a study and the perspectives in view of the LHC Run3+4 will be presented.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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