Contribution ID: **487**   Type: **Talk**

Investigating the hyperon-nucleon strong interaction with a precision measurement of the hypertriton lifetime in ALICE

Friday, 31 July 2020 09:55 (15 minutes)

The hypertriton is a bound state of proton, neutron and lambda. Studying it provides insights about the strong interaction between the lambda and ordinary nucleons. In particular, the hypertriton is an extremely loosely bound object, with a lambda separation energy E_Λ of 150 ± 8 keV. One way to investigate the hypertriton's internal structure, and thus hyperon-nucleon interactions, is to measure the hypertriton lifetime precisely.

In the past, these measurements had large uncertainties and did not give a clear answer. However, thanks to the very large set of Pb-Pb collisions collected during the run 2 of the LHC the ALICE collaboration has performed systematic studies on the hypertriton lifetime. Both the two and three body decay channels have been studied with the help of machine learning techniques for the signal extraction.

The precision of the new ALICE results on the hypertriton lifetime is comparable with the current world average, thus providing strong constraints on models describing hyperon-nucleon interactions.

I read the instructions

Secondary track (number)

Primary author: MAZZASCHI, Francesco (Universita e INFN Torino (IT))

Presenter: MAZZASCHI, Francesco (Universita e INFN Torino (IT))

Session Classification: Strong Interactions and Hadron Physics

Track Classification: 06. Strong Interactions and Hadron Physics