

$\Lambda(1520)$ production in proton-proton and proton-nucleus collisions with HADES

Thursday, 20 May 2021 17:25 (20 minutes)

The internal structure of hyperons is controversially discussed based on various models, e.g. quark, bag and molecular models [1,2]. Recent publications presents a new approach wherein excited hyperon states are dynamically generated by interactions between the baryonic decuplet and the mesonic octet. That approach predicts also a substantial in-medium modifications for some hyperons, like $\Lambda(1520)$, $\Sigma^*(1380)$ [3].

The HADES collaboration has collected the data in a vast of diverse experiments: proton-proton and proton-nucleus collisions, heavy ion experiments and pion induced reactions. This versatility gives a possibility to compare similar processes occurring in a different environment. In the talk, I would like to present a comparison between an inclusive $\Lambda(1520)$ production in pp@3.5 GeV and pNb@3.5 GeV reactions measured by the HADES. The respective cross-sections for hyperon production via $[\Lambda(1116)\pi^+\pi^-]$ X decay channel will be shown together with differential distribution in a function of transverse momentum and rapidity. Significant differences and enhancement of the $\Lambda(1520)$ production w.r.t to $A^{2/3}$ scaling in p-Nb data are visible. Furthermore, in the latter case also the hyperon line shape differs w.r.t the one measured in pp collisions.

[1] E. Kaxiras et al., Phys. Rev. D 32, August 1985

[2] Lang Yu et al., Phys. Rev. D 73, 114001, June 2006

[3] M. Kaskulov, E. Oset, Phys. Rev. C 73, 045213, April 2006

Collaboration

HADES

Primary author: NOWAKOWSKI, Krzysztof (Jagiellonian University)

Presenter: NOWAKOWSKI, Krzysztof (Jagiellonian University)

Session Classification: Parallel Session C4