

Strangeness in Quark Matter 2019



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Study of Strange Particle Production in pp and pPb Collision at $\sqrt{s_{NN}} = 7 TeV$ using the simulation data

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The yields of strange hadrons: K_s^0 -meson, Λ^- and Ξ^- -hyperon produced in proton-proton (pp) and proton-nucleus (pPb) collisions at $\sqrt{s_{NN}} = 7 TeV$ (in rapidity interval of $|y| < 2$ and transverse momentum range of $0 < p_T < 10 GeV/c$) as a function of p_T are presented. The simulation codes, *EPOS1.99*, *EPOS – LHC* and *QGSJETII – 04* are used as event generators. The predictions of simulation results for the pp collisions are compared with the experimental data obtained by ALICE and CMS detectors. It was observed that: for the pp collisions, the simulation codes cannot describe well the experimental data on strangeness production in pp collisions at $7 TeV$. In the area of low p_T less than $1.6 GeV/c$ for the K_s^0 -mesons and $1.3 GeV/c$ for the Λ^- -hyperons, models predictions are systematically greater than the experimental data. Then in the II regions the simulation data and experimental ones cross each other. In the III regions experimental data are systematically greater than the models' predictions. For the Ξ^- -hyperons the production results were observed only from the *EPOS1.99* and *EPOS – LHC*. In case of pPb , all 3 codes give almost same predictions for the p_T distributions of K_s^0 -mesons. But with increasing the mass of particles some deviations from *QGSJETII – 04* model predictions for the Λ^- -hyperon is observed in the regions of $p_T > 1.5 GeV/c$. For the p_T distributions of the Ξ^- -hyperons the deviations observed even between the 2 tunes of the EPOS code in the interval of $p_T > 2 GeV/c$. The codes predictions depend on the mass of the strange particles produced in the pPb interactions at $7 TeV$. Unfortunately, there are not experimental data for the strange particles p_T distributions at this energy of pPb collisions. Then the ratios of the experimental data to model simulations give the quantitative results to characterized the differences between the model predictions and the experimental data for the pp and pPb collisions at $7 TeV$.

Collaboration name

Track

Strangeness and Light Flavour

Primary author: TABASSAM, Uzma (COMSATS University Islamabad)

Presenter: TABASSAM, Uzma (COMSATS University Islamabad)

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