Contribution ID: **3** Type: **Contributed talk**

Strange hadron production in high-multiplicity hadronic collisions with cosmic ray monte carlo simulations for atmospheric air showers and beyond: simulation study

Monday, 8 July 2024 17:50 (20 minutes)

In this paper, we conduct a Monte Carlo simulation study to investigate the production of strange and multi-strange hadrons in high-multiplicity proton-proton collisions. Our objective is to refine and validate the hadronic interaction models crucial for air shower simulations such as EPOS, QGSJET, SIBYLL, and PYTHIA. These models play a pivotal role in predicting the propagation of extensive air showers in the atmosphere and comparing them with experimental data from cosmic ray observatories such as high-multiplicity proton-proton collisions in the ALICE experiment. In the case of (K0S) mesons, at low multiplicity classes, we found that EPOS and PYTHIA can show a better prediction of the data than QGSJET and SIBYLL, while QGSJET exhibits favorable predictions at higher multiplicity classes. On the other hand, when looking at (Λ) baryons, the EPOS model is the only model that shows the best comparison to data. In addition, We employ the Tsallis distribution to extract the effective temperature (Teff) and the non-extensivity parameter (q).

session

C. Hadron Structure

Primary author: HAJ ISMAIL, Abd Al Karim

Presenter: HAJ ISMAIL, Abd Al Karim

Session Classification: E. Hadron and Nuclear Interactions