Contribution ID: **106** Type: **not specified**

Idenified particle spectra in Pb-Pb, Xe-Xe and p-Pb collisions with Tsallis blast-wave model

We investigate the identified hadrons transverse momentum (p_T) spectra in Pb-Pb (Pb-Pb, Xe-Xe, p-Pb) collisions at
p
$\sqrt{s_{NN}}$ = 2.76 (5.02, 5.44, 5.02) TeV in the framework
of Tsallis-blast wave (TBW) model with a linear transverse velocity profile and with
a constant velocity profile. In this model, the Tsallis temperature (T), the average
radial flow velocity ($\langle\beta\rangle$) and the degree of non-equilibrium (q) of the system are common for all hadrons when a combined fit is performed to the pT spectra of different particles at a given centrality. It is found that the model can describe the particle spectra well up to 3 GeV/c. For both profiles, the transverse
flow velocity decreases from central to peripheral collisions while the non-extensive parameter q exhibits the opposite behavior, indicating a more rapid expansion and less off-equilibrium of the system in more central collisions. Moreover, we observe that in central collisions $\langle\beta\rangle$ and q (T) from the fit with the linear profile are smaller (is slightly larger) than those (that) with the constant profile, while in peripheral collisions $\langle\beta\rangle$, T and q from the former are compatible with those from the latter. We also derived and discussed the relation between the Tsallis temperature and the thermal temperature. In addition, to check whether a scenario of an early freeze-out of strange particles at the LHC exists, the particle spectra are investigated by grouping them into strange and non-strange hadrons. The combined fit gives an insight on the degree of non-equilibrium, the radial flow and the Tsallis temperature of the system at the kinetic decoupling. It provides a comparison between the results at different energies in the same collision system and the results in different collision systems at the same or similar energy.

Topics

Hydrodynamics and Collective Flows

Primary author: Ms CHE, Guorong (Shaanxi Normal University)

Co-authors: Dr ZHENG, Hua (Shaanxi Normal University); Mr GU, Jinbiao (Shaanxi Normal University); Dr ZHANG, Wenchao (Shaanxi Normal University)

Presenter: Mr GU, Jinbiao (Shaanxi Normal University)