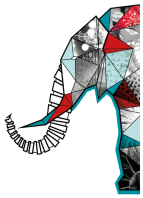
25e Congrès Général de la Société Française de Physique



ID de Contribution: **93** Type: **Poster**

Some properties of the pT regions observed at the LHC energies

We argue that pT distribution data from the LHC on the invariant differential yield of the charged particles (in the pp and PbPb collisions), eta-mesons and neutral pions in pp collisions contains several pT regions with special properties. The regions could be characterized by the length of the regions and two free fitting parameters. These distributions were analyzed by fitting the data with exponential functions. We conclude that the regions reflect features of fragmentation and hadronization of partons through the string dynamics. It seems that the region of 4 GeV/c< pT <20 GeV/c has the highest number of strings. The increase in string density in this region could lead to fusion of strings, the appearance of a new string and collective behaviour of the partons in the most central collisions. These phenomena can lead to the acceleration of partons because of the inverse Compton effect. It was found that the ratio of the length for the eta-mesons to one for the neutral pi-mesons is approximately equal to the ratio of their mass. Assuming that the values of the lengths are directly proportional to the string tension the result could be considered as evidence in favor of parton string fragmentation dynamics. We concluded that the eta-mesons were produced at smaller values of α_S compared with that for neutral pi-mesons.

Choix de session parallèle

1.3 Physique nucléaire: physique hadronique et QCD

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Classification de Session: Séance Poster