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Application of the Momentum Kick Model with multiplicity dependence to the pp collisions at 13 TeV at the LHC

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Previously, the ridge phenomenon in heavy-ion collisions such as PbPb has been well described by hydrodynamic models. However, the ridge structure of a small system, such as pp collisions, which could not offer enough conditions to create the medium required by hydrodynamic models, was observed in high-multiplicity events. This is why we focus on the Momentum Kick Model (MKM), which explains the ridge phenomenon through the kinematic process. Moreover, since the ridge yields depend on multiplicity in high-energy collision experiments, C. Y. Wong developed the MKM with multiplicity via an impact parameter, a noteworthy success in the CMS pp at 7 TeV.

Recently, the multiplicity-dependent ridge structure was observed in the CMS pp at 13 TeV, revealing two peculiarities of the ridge yields: the proportionality with the multiplicity and the maximum yield at the middle range of the p_T region. To check the validity of the MKM, we apply this model with multiplicity to this CMS data.

Theory / experiment

Theory

Group or collaboration name

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