

10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



Contribution ID: 213

Type: **Oral Presentation**

String shoving effects on jets in pp, pA and AA collisions

Tuesday, June 2, 2020 12:00 PM (20 minutes)

The collective effects in high-multiplicity proton-proton, proton-nucleon and nucleon-nucleon collisions have not yet been attributed to a common mechanism. Within the Lund string model of partons, the interaction force between strings (aka. string shoving) could be responsible for such effects. So far, this aspect has only been present for pp in the existing PYTHIA8 framework, but after the Angantyr model (arXiv: 1806.10820) was implemented, it has been possible to include such a machinery also for pA and AA.

In the previous shoving model implementation for pp (arXiv:1612.05132), only strings parallel to the beam axis were considered for calculating the interaction force. This was a special case since most strings in events with jets do not satisfy this condition and hence, completely dismissed the chance to study possible effects on jets.

Jet observables in dijet events are excellent probes to study collision dynamics in dense systems. Interacting Lund strings will affect jet observables and suggests a new common mechanism responsible for jet modification in pA and AA. In this talk, we present our new implementation of the string shoving mechanism in PYTHIA8 which lets us study the effects on jet observables in pp, pA and AA collisions. We also present preliminary results showing the effects in hadron-jet correlation studies.

Collaboration (if applicable)

Track

Jets and High Momentum Hadrons

Contribution type

Contributed Talk

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Session Classification: Parallel

Track Classification: Jets and High Momentum Hadrons