JET TRANSVERSE FRAGMENTATION MOMENTUM FROM h–h CORRELATIONS IN pp AND p–Pb COLLISIONS AT THE ALICE EXPERIMENT

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In particle collider experiments, jets are collimated sprays of final state particles that are associated with the fragmentation of a hard parton generated in the primary interaction. Typically fragmentation phenomenology is divided into two parts. In the first part of the fragmentation the hard parton emits soft QCD radiation. This can be treated perturbatively via QCD splitting functions and is called QCD showering. The second part is hadronization in which final state particles are formed from showering partons in a non-perturbative process. One frequently used hadronization model is the Lund string model, which is used for example in the PYTHIA event generator [1]. The approach taken to jet fragmentation by PYTHIA is followed closely in this work.

The jet fragmentation can be efficiently studied using the method of two particle correlations. A useful observable is the jet transverse fragmentation momentum j_{T}, which describes the angular width of the jet. Previously for example the CCOR [2] and PHENIX [3] collaborations have measured $\sqrt{\langle j_{\mathrm{T}}^2 \rangle}$ in pp collisions and they have found no dependence on trigger p_{T}. These results have been interpreted to reflect a universality in the jet hadronization process. However, they determine only a single value for j_{T} and therefore mix showering and hadronization processes. In this contribution, a more differential study will be presented in which separate j_{T} components for showering and hadronization will be distinguished from the data measured by the ALICE experiment [4]. The p_{Tt} dependence of the hadronization component $\sqrt{\langle j_{\mathrm{T}}^2 \rangle}$ is found to be rather flat, as suggested by previous measurements. However, the showering component shows slightly rising trend in p_{Tt}. The data from $\sqrt{s} = 7\,\mathrm{TeV}$ pp and $\sqrt{s} = 5.02\,\mathrm{TeV}$ p–Pb collisions will also be compared to the results obtained from PYTHIA8 simulations.

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