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Spherocity study for Fragmentation Functions using Pythia MC generator

The QCD factorization theorem describes the charged particles production process in strong interactions in high energy collisions. These formalism allow us to understand the perturbative (p-QCD) and non-perturbative regime of QCD. Using p-QCD it is possible to calculate the partonic cross sections of short distance processes; however, hadronic processes can not be computed fully with perturbative QCD due to the non-perturbative nature of hadronization. In this regard, universal long distance functions, such as the Parton Distribution Functions and the Fragmentation Functions (FF) are used to complete the whole dynamics of hadron collisions. The FF represents the probability of a parton carrying a fraction z of momentum to form a certain kind of hadron. In this work we implement an study in order to find if these probabilities differ on the shape of the process. In particular, we perform an study on the spherocity event shape under Pythia Monte Carlo event generator framework.

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