

Fragmentation of charged-particle jets in pp collisions with ALICE

Friday, 3 November 2023 15:25 (20 minutes)

In high energy pp collisions, quarks and gluons can scatter as free particles, after which they will radiate away their energy via gluon Bremsstrahlung and quark-antiquark pair production, before hadronising back into bound states. The resulting sprays of energetic particles can be reconstructed as jets and function as probes for studying the strong interaction. The momentum distribution of particles within jets can be described by (jet) fragmentation functions, which is expected to be different for gluon-initiated jets and quark-initiated jets. Our current knowledge of fragmentation functions is almost exclusively based on fits to data from e^+e^- collisions and semi-inclusive deep inelastic scattering processes, both of which are mainly sensitive to quark fragmentation, leaving gluon fragmentation functions poorly constrained. Hadronic collisions at the LHC, however, produce data rich in gluon-initiated final states and offer excellent opportunities to study gluon fragmentation directly. In this talk, we present the potential for ALICE to investigate gluon fragmentation with unprecedented precision by measuring fragmentation into baryons and mesons in pp collisions at $\sqrt{s} = 13.6$ TeV.

Primary author: VAN WEELDEN, Gijs

Presenter: VAN WEELDEN, Gijs

Session Classification: Parallel Sessions (III)