

Exploring hadronization with heavy-flavor jets with LHCb

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Understanding the nonperturbative process of hadronization is a persistent goal in experimental studies of QCD. Since heavy quark production is suppressed at the hadronization scale, heavy-flavor hadrons offer a high-precision probe of the connection between theoretical calculations and experimental final states. Jets containing different flavors of these heavy hadrons, reconstructed across a broad range of jet transverse momentum, explore the dependence of local hadronic formation at different partonic mass scales with distinct final states. Furthermore, quarkonia production in jets explores the intersection between the parton shower, where gluons split into heavy quark-antiquark pairs, and the production of closed heavy-flavor hadrons. Jet substructure can also be used to probe the formation of exotic hadrons, whose structure is still not well understood. This talk presents recent studies of hadronization using heavy-flavor jets detected with the LHCb detector. These studies include inclusive hadron production in heavy-flavor jets, as well as quarkonia and tetraquark production in jets. Results are compared to various models of hadronization, providing strong new constraints on theoretical predictions of confinement in jets.

Category

Experiment

Collaboration

LHCb

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