

J/Psi production in jets at LHCb

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The production of J/ψ mesons in hadron-hadron collisions occurs at the transition between the perturbative and non-perturbative regimes of quantum chromodynamics, resulting in a rich phenomenology that is yet to be fully understood.

LHCb studied the production of J/ψ mesons in jets in the forward region of proton-proton collisions at a center-of-mass energy of 13 TeV. The fraction of the jet transverse momentum carried by the J/ψ meson, $z(J/\psi) \equiv p_T(J/\psi)/p_T(\text{jet})$, is measured using jets with $p_T(\text{jet}) > 20$ GeV in the pseudorapidity range $2.5 < \eta(\text{jet}) < 4.0$. The observed $z(J/\psi)$ distribution for

J/ψ mesons produced in b-hadron decays is consistent with expectations. However, the results for prompt J/ψ production do not agree with predictions based on fixed-order non-relativistic QCD. This is the first measurement of the p_T fraction carried by prompt J/ψ mesons in jets at any experiment.

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