

QCD LCDAs of Heavy Mesons from boosted HQET

Light-cone distribution amplitudes (LCDAs) frequently arise in factorization theorems involving light and heavy mesons. The QCD LCDA for heavy mesons includes short-distance physics at energy scales of the heavy-quark mass. We achieve the separation of this perturbative scale from the purely hadronic effects by matching the QCD LCDA to the convolution of a perturbative function with the universal, quark-mass independent LCDA defined in heavy-quark effective theory. This factorization allows to resum potentially large logarithms between Λ_{QCD} and m_Q as well as between m_Q and the scale Q of the hard process in the production of boosted heavy mesons at colliders. As an application we derive new theoretical predictions for the branching ratio of the decay $W^\pm \rightarrow B^\pm \gamma$. Furthermore, we provide phenomenological models for the QCD LCDAs of both the B and D mesons expressed as expansions in Gegenbauer polynomials.

Primary author: 魏, 焰冰 (BJUT)

Presenter: 魏, 焰冰 (BJUT)