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QED soft functions for heavy mesons

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Soft functions are universal hadronic matrix elements that appear in factorization theorems for hard exclusive and inclusive processes and contain non-perturbative information about the partonic structure and soft interactions of the particles involved. As such, they form an important ingredient for precision calculations in the Standard Model. The soft function for a heavy meson is traditionally referred to as light-cone distribution amplitude (LCDA) due to its analytic structure in QCD that dictates the momentum support of the light quark in the meson. Previously, QED effects have been neglected in the LCDA definition since they are expected to be small at scales below the heavy meson mass. However, motivated by the increasingly precise measurements at LHCb and Belle II, the inclusion of QED effects has become a major point of interest. In this talk, we analyze the QCD×QED generalized soft function for charmless *B* decays and discuss how QED effects alter the analytic structure of the soft matrix element and its behaviour under scale evolution. Furthermore, we provide numerical estimates for the first inverse-logarithmic moments of the *B* meson that appear in physical observables.

Summary

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