Calculation of B-meson fragmentation function considering the effect of meson mass

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Abstract

Nowadays, heavy mesons and baryons are produced and decayed at LHC in abundance. These processes are good sources to study the QCD theory, especially to study the hadron structures. Therefore, the phenomenology of heavy hadrons fragmentation function is a basic and important subject in the Particle Physics. In the present work, we replicate the calculation heavy meson fragmentation function in the quark model and we compare our results with the well known phenomenological results and we also, for the first time, incorporate the effect of hadron mass in the calculations. We show that the mass effect not only increases the fragmentation function for the special values of the scaling variable but also it creates a threshold to produce a heavy meson.

Keywords: fragmentation function, heavy mesons, phenomenological models

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