

Relation between pole and running heavy quark masses in QCD : $\mathcal{O}(\alpha_s^4)$ level and beyond

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The PT higher order corrections and their flavor dependence for the QCD relation between pole and running masses of heavy quarks are estimated by means of the effective charges motivated methods, defined in the Euclidean and Minkowskian regions, and the renormalon-based approach, predicting the asymptotic behavior of the corresponding PT series. These methods unambiguously forecast a decrease of the five and six-loop contributions to the pole mass of top-quark, expressing through its running analogs in the $\overline{\text{MS}}$ -scheme. Thus we conclude about the legitimacy of using the concept of pole mass of t -quark up to six-loop level.

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