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A renormalon-motivated resummation for low-energy QCD observables

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Content

A generalisation of our previous approach of a renormalon-motivated resummation of the QCD observables is presented. Previously, it was constructed for those spacelike observables whose perturbation expansion is $calD(Q^2) = a(Q^2) + calO(a^2)$, where $a(Q^2) \equiv \alpha_s(Q^2)/\pi$ is the running QCD coupling. Now the resummation is generalised to spacelike quantities $calD(Q^2) = a(Q^2)^{\nu_0} + calO(a^{\nu_0+1})$ and timelike quantities $calF(\sigma) = a(\sigma)^{\nu_0} + calO(a^{\nu_0+1})$, where ν_0 is in general a noninteger number $(0 < \nu_0 \leq 1)$. With this method, a timelike quantity is evaluated, namely the scheme-invariant factor of the Wilson coefficient of the chromomagnetic operator in the heavy-quark effective Lagrangian, and related quantities.

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