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## Investigation of the Perturbative Expansion of Heavy Quark Correlators for $N_f = 0$

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The QCD-coupling is a necessary input in the computation of many observables, and the parametric error on input parameters can be a dominant source of uncertainty. The coupling can be extracted by comparing high order perturbative computations and lattice evaluated moments of mesonic two-point functions with heavy quarks, which provide a high energy scale for perturbation theory. The truncation of the perturbative series is an important systematic uncertainty.

We study this issue by measuring pseudo-scalar two-point functions in volumes of  $L = 2$  fm with twisted-mass Wilson fermions in the quenched approximation.

We use full twist, the non-perturbative clover term and lattice spacings down to  $a = 0.015$  fm to tame the sizable discretization effects. Our preliminary results indicate that higher order perturbative corrections lead to  $\sim 10\%$  deviations of the extracted Lambda parameter from its asymptotic value when the quark mass is around  $1.5 m_{\text{charm}}$ .

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