

XVth Quark Confinement and the Hadron Spectrum



Contribution ID: 99

Type: Oral

Heavy meson LCDA from lattice QCD

Thursday 22 August 2024 16:50 (20 minutes)

We present a method to compute lightcone distribution amplitudes (LCDAs) of heavy meson within heavy quark effective theory (HQET). Our method utilizes quasi distribution amplitudes (quasi-DAs) with a large momentum component P_z . We point out that by sequentially integrating out P_z and m_H , one can disentangle different dynamical scales. Integrating out P_z allows to connect quasi-DAs to QCD LCDAs, and then integrating out m_H enables to relate QCD LCDAs to HQET LCDAs. To verify this proposal, we make use of lattice QCD simulation on a lattice ensemble with spacing $a=0.05187\text{ fm}$. The preliminary findings for HQET LCDAs qualitatively align with phenomenological models. Using a recent model for HQET LCDAs, we also fit the first inverse moment $\lambda^{-1}B$ and the result is consistent with the experimentally constrain from $B \rightarrow \gamma \ell \nu \ell$. This agreement demonstrates the promise of our method in providing first-principle predictions for heavy meson LCDAs.

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Session Classification: Heavy Quarks

Track Classification: C: Heavy Quarks