

Probing heavy meson lightcone distribution amplitudes with heavy quark spin symmetry

We illustrate that the leading-twist light-cone distribution amplitudes (LCDAs) defined in heavy-quark effective theory (HQET) can be determined through lattice simulations of quasi-distribution amplitudes (quasi-DAs) with a large momentum component P^z . Exploiting heavy-quark spin symmetry, we show that the LCDAs for a heavy pseudoscalar and vector meson in the context of HQET exhibit degeneracy, and the degeneracy allows for the utilization of quasi DAs for both pseudoscalar and vector mesons on the lattice. We then derive the relevant short-distance coefficients for the matching between LCDAs defined with QCD fields and HQET LCDAs at the one-loop level. The incorporation of these three quasi DAs can provide possible insight into power corrections. Discrepancies between the corresponding results offer a valuable perspective for estimating power corrections within the system which are imperative for precise investigations into heavy-meson LCDAs in the future particularly in the context of lattice QCD.

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