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Dipion distribution amplitudes from the $D \rightarrow \pi\pi l \nu_l$ semileptonic decay

Thursday, July 20, 2023 3:00 PM (20 minutes)

The light-cone distribution amplitudes of two-pion states are universal hadronic objects involved in the factorization of heavy hadron decays or in the large momentum-transfer transitions with two pions in the final state. The leading twist-2 distribution amplitudes are parameterized in terms of the functions of the dipion invariant mass serving as coefficients in the Gegenbauer expansion. As a new method to determine these functions, we suggest to use the measurements of the $D \rightarrow \pi\pi l \nu_l$ semileptonic decay. The differential decay distributions are expressed in terms of the $D \rightarrow \pi\pi$ form factors, using for the latter the QCD light-cone sum rules in terms of dipion distribution amplitudes.

As a first application of this method, we employ the available BESS-III data on $D^0 \rightarrow \pi^- \pi^0 l^+ \nu_l$ decay distribution and fit the first few Gegenbauer functions for the isospin-1 dipion distribution amplitudes.

Consent

I consent to recording/broadcasting my presentation.

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