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Heavy-Light Diquark Mass Splitting from QCD Sum-Rules and Diagrammatic Renormalization Methods

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QCD Laplace sum-rules are an important tool to extract information about bound states of quarks from perturbative QCD with non-perturbative effects of QCD condensates. Applying the QCD Laplace sum-rules to strange and non-strange heavy-light diquarks, I compare their masses. Diquark correlation functions are renormalized using the diagrammatic renormalization method. It is found that the strange quark condensate parameter $\kappa = \langle \bar{s}s \rangle / \langle \bar{n}n \rangle$ plays an important role in determining the heavy-strange $[Qs]$ and heavy-non-strange $[Qn]$ diquark mass splitting.

Keyword-1

Diquarks

Keyword-2

QCD Sum-Rules

Keyword-3

Diagrammatic Renormalization

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