High Energy Physics - Phenomenology

Mixing angle between $^3P_1$ and $^1P_1$ in HQET

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Some claim that there are two independent mixing angles ($\theta = 35.3^\circ$, -54.7°) between $^3P_1$ and $^1P_1$ states of heavy-light mesons in heavy quark symmetric limit, and others claim there is only one ($\theta = 35.3^\circ$). We clarify the difference between these two and suggest which should be adopted. General arguments on the mixing angle between ^3L_L and ^1L_L of heavy-light mesons are given in HQET and a general relation is derived in heavy quark mass limit as well as that including the first order correction in $1/m_Q$.

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