

Heavy-quark spin symmetry partners of the X(3872) molecule.

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Heavy quark spin symmetry (HQSS) partners of the X(3872) 1^{++} molecule are discussed in a coupled-channel approach with non-perturbative pions. In the strict heavy-quark limit the 1^{++} molecular state has three degenerate partner states with the 1^{+-} , 0^{++} and 2^{++} quantum numbers. In the presence of pions this result is shown to be correct only if all allowed coupled-channel transitions between the DD , DD and DD^* channels governed by the one-pion exchange potential are included. On the contrary, neglecting some of the coupled-channel transitions leads to a severe violation of HQSS and yields regulator-dependent results for the partner states. Deviations from the heavy-quark limit predictions are investigated for the 2^{++} partner state of the X(3872).

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