

Three-body model of the interaction in heavy meson decay

We develop a relativistic three-model for the final state interaction in $D^+ \rightarrow K^+ \pi^- \pi^-$ decay based on the ladder approximation of the Bethe-Salpeter equation. The decay amplitude is separated in a smooth term and a three-body fully interacting contribution, that is factorized in the standard two-meson resonant amplitude times a reduced complex amplitude that carries the effect of the three-body rescattering mechanism. The off-shell reduced complex amplitude is a solution of an inhomogeneous Faddeev type integral equation, that has as input the S-wave isospin $1/2$ $K^+ \pi^-$ transition matrix. The parameters of the S-wave isospin $1/2$ $K^+ \pi^-$ scattering matrix is fitted to the experimental data.

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