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K-matrix formalism in light-meson spectroscopy

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In this work we study the K -matrix formalism and show how this can be applied to Dalitz plot analyses of charm-meson decays, such as $D^0 \rightarrow K_s^0 \pi^+ \pi^-$. The K -matrix, in contrast to the typical Isobar Model (IM), allows to properly include in the decay amplitude broad-overlapping resonances and non-resonant background, which are features of some of the known experimental results in light-meson spectroscopy. The $\pi\pi$ S-wave scattering presented in this work is a good example of this underlying dynamics. Moreover, the K -matrix formalism imposes by construction a unitarity constraint, which is not ensured by other approaches as IM.

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