

Can the two-pole structure of the $D_0^*(2300)$ be understood from recent lattice data?

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From unitarized chiral perturbation theory analyses, the structure of $D_0^*(2300)$ and $D_1(2430)$ can be understood as the interplay of two poles, corresponding to two scalar/axial-vector isospin doublet states with different SU(3) flavor content. These states emerge from non-perturbative dynamics of D mesons scattering off the Goldstone boson octet. This two pole picture solves various problems that the experimental observation posed. However, in the recent lattice studies of $D\pi$ scattering at higher pion masses, only one pole was reported in the D_0^* channel, while it was not possible to extract reliable parameters of a second pole from the lattice data. We provide an explanation for this contradiction and further show that the second pole can be extracted from the lattice data by imposing SU(3) constraints on the fitting amplitudes. This approximate symmetry constrain on the K -matrix formalism also reduces the number of fitting parameters.

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