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## Three-body analysis of the tetraquark $T_{cc}^+(3875)$

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We present a strategy for applying the relativistic three-particle scattering formalism to reactions of non-degenerate mesons of arbitrary angular momenta. For concreteness, we focus on the  $DD\pi$  system in the charm  $C = 2$  and isospin  $I = 0$  sectors, where the  $T_{cc}^+$  tetraquark appears as a pole in the elastic  $DD\pi \rightarrow DD\pi$  scattering amplitude. We solve integral equations for a model describing this three-body process and access the  $DD^*$  phase shifts at heavier-than-physical pion mass via the LSZ reduction. We compare our results to available lattice data at  $J^P = 1^+, 0^-$ . Finally, we apply two- and three-body quantization conditions to the same model and discuss the effect of the left-hand cuts associated with one-pion exchanges on the predicted finite-volume energy levels.

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