

XVth Quark Confinement and the Hadron Spectrum



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Tcc from finite volume energy levels: the left-hand cut problem and its solution

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In this talk, I will present a novel effective-field-theory-based approach for extracting two-body scattering information from finite volume energies. By explicitly incorporating one-pion exchange, we overcome the challenging left-hand cut problem in Lüscher's method and can handle finite volume energy levels both below and above the left-hand cut. Additionally, we utilize the plane wave basis instead of the conventional partial wave expansion to account for partial wave mixing effects resulting from rotational symmetry breaking in a cubic box. Applied to the lattice data for DD^* scattering at a pion mass of 280 MeV, it reveals the significant impact of the one-pion exchange interaction. This study demonstrates, for the first time, that two-body scattering information can be reliably extracted from lattice spectra including the left-hand cut.

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