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Doubly charm tetraquark using meson-meson and diquark-antidiquark interpolators

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We perform a lattice simulation to investigate the doubly charm tetraquark T_{cc}^{++} observed by the LHCb collaboration with flavor content $cc\bar{u}\bar{d}$, isospin-0, and only 0.4 MeV below the $D^{*+}D^0$ threshold. We implement two-meson interpolators, and additionally also diquark-antidiquark interpolators. This is the first extraction of the scattering amplitude from correlators based on both types of operators. The simulation is performed on $N_f = 2 + 1$ CLS ensembles in the lattice spacing with $m_\pi \simeq 280$ MeV and $a \simeq 0.086$ fm. The main aim of this work is to determine the impact of the diquark-antidiquark operators on the eigenenergies and the scattering amplitude.

Topical area

Hadronic and Nuclear Spectrum and Interactions

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