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Double charm tetraquark in DD^* scattering from lattice QCD

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The LHCb collaboration recently discovered a doubly charmed tetraquark T_{cc} with flavor $cc\bar{u}\bar{d}$ just 0.36(4) MeV below D^0D^{*+} threshold. This is the longest lived hadron with explicitly exotic quark content known to this date. We present the first lattice QCD study of DD^* scattering in this channel, involving rigorous determination of pole singularities in the related scattering amplitudes that point to the existence of T_{cc} . Working with a heavier than physical light quark mass, we find evidence for a shallow virtual bound state pole in the DD^* scattering amplitude with $l = 0$, which is likely related to T_{cc} .

In-person participation

Yes

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