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Doubly Charmed $\Lambda_c \Lambda_c$ scattering from Lattice QCD

Thursday, 26 September 2024 10:00 (30 minutes)

To explore the properties of H-like dibaryon $\Lambda_c \Lambda_c(0^+)$, we proceed ab-initio calculation on lattice. Two Wilson-Clover ensembles are used with the same setup at $m_\pi \approx 303$ MeV and lattice spacing $a \approx 0.07746$ fm. We find the coupling between $\Lambda_c \Lambda_c$ and $\Xi_{cc}N$ or $\Sigma_c \Sigma_c$ couldn't convert the repulsion between two Λ_c s into attraction. Therefore single channel is considered. A discretized modification on Luscher equation is firstly proposed in this work. Phase shift also shows the weak interaction and scattering length a_0 is $-1.43(49)$ fm. Under this quark mass, we find no bound state relying on our calculation.

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