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The structure of the lightest positive-parity charmed mesons from LQCD

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The nature of low-lying scalar and axial-vector charmed mesons has long been debated, specifically whether they are best explained by hadronic molecular or compact tetraquark models. These two models predict quite different features for the accessible $SU(3)$ multiplets in the scalar and axial-vector sectors.

We performed $N_f=3+1$ lattice simulations and calculate the energy levels of the $SU(3)$ $[6]$ and $[15]$ multiplets for both the scalar and axial-vector mesons.

In both sectors we find attractive states for the $[6]$ and repulsive interactions for the $[15]$. This is consistent with the hadronic molecule picture, but not the compact tetraquark picture a low-lying $[15]$ states in the axial-vector sector but not in the scalar sector.

Parallel Session (for talks only)

Hadronic and nuclear spectrum and interactions

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