



Contribution ID: 394

Type: **Parallel Talk**

Isospin- $\frac{1}{2}, \frac{3}{2}$ $D^{(*)}\pi$ scattering and the D_0^* resonance

Tuesday, 1 August 2023 14:50 (20 minutes)

We present preliminary results of lattice QCD calculations for $D\pi$ scattering with isospin- $\frac{1}{2}$ and $\frac{3}{2}$. Using newly generated $N_f = 2 + 1$ Wilson-Clover configurations by the CLQCD collaboration, we examine two volume extents ($L^3 \times T = 32^3 \times 96$ and $48^3 \times 96$) at the same lattice spacing ($a = 0.080$ fm) with a pion mass of $m_\pi \approx 290$ MeV. Employing various operators in both the rest and the moving frame, we determine S -wave scattering phase shifts from finite-volume spectra, assuming negligible contributions from higher partial waves. We identify a virtual state associated with the D_0^* in these ensembles. Ongoing investigations aim to determine higher partial waves and explore the m_π dependence and the continuum limit.

Topical area

Hadronic and Nuclear Spectrum and Interactions

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Session Classification: Hadronic and Nuclear Spectrum and Interactions