

Coupling to Multihadron States with Chiral Fermions

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Chiral symmetry is presumed to be a crucial component in the strong interaction and QCD, but its role in spectroscopy, especially for baryons, has not been fully explored. Compounding this, chiral fermions are uncommon in lattice calculations due to their expensive nature. We calculate $\eta\pi$, $K\pi$ and $N\pi$ states with $q\bar{q}$ and qqq interpolation fields at $a = 0.0114$ fm on a $48^3 \times 96$ mixed-action lattice at physical pion mass, with domain-wall sea quarks and overlap valence quarks. We study the spectral weights of these states as a function of the valence pion mass, which ranges from $m_\pi = 115 - 665$ MeV, to be compared with results from non-chiral clover valence quarks on the same domain-wall lattice in order to examine their non-chiral effects, which are expected to decrease with the lattice spacing.

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