

Study of the rho resonance using the HAL QCD method

Tuesday, 4 August 2020 15:20 (20 minutes)

In this talk, we show the recent status of the rho resonance study in the HAL QCD method. We investigate the I=1 two-pion potential at $m_\pi \approx 411$ MeV by using a new calculation strategy, namely the combination of three techniques: the one-end trick, the sequential propagator, and covariant approximation averaging (CAA). Thanks to the new strategy, we determine the non-local I=1 two-pion potential at the next-leading-order of the derivative expansion for the first time and obtain the pole of the S-matrix corresponding to the rho resonance. As regards the resonance parameters, our resonance mass is consistent with the previous study using the finite-volume method, but slightly larger decay width and coupling are obtained. We discuss possible origins of this difference.

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Session Classification: Hadron Spectroscopy and Interactions

Track Classification: Hadron Spectroscopy and Interactions