

Covariant vector meson-vector meson interaction and dynamically generated resonances

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Collaboration

Abstract content

We do the analysis of the covariant vector meson-vector meson scattering in a unitarized $SU(3)$ chiral theory with the lowest lying vector meson octet. We demonstrate that the left-hand cuts would cross over the right-hand cuts for the coupled-channel unitarization with the on-shell factorization approach of Bethe-Salpeter equation. Therefore, first iterated solution to N/D method is employed to overcome the difficulties of the on-shell factorization of Bethe-Salpeter equation. We investigate the possible dynamically generated resonances and bound states. A comparison with the extreme non-relativistic calculation, free of left-hand cuts, is provided. This comparison is important since in the extreme non-relativistic approach some of the bound states are far away from the threshold. In the full covariant form, we have shown some of those bound states do not appear and some resonances are problematic to work within this scheme.

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