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Six-meson amplitude in QCD-like theories

Friday, 8 July 2022 10:00 (15 minutes)

We calculate the relativistic six-meson scattering amplitude at low energy within the framework of QCD-like theories with n degenerate quark flavors at next-to-leading order in the chiral counting. We discuss the cases of complex, real and pseudo-real representations, i.e. with global symmetry and breaking patterns $SU(n) \times SU(n)/SU(n)$ (extending the QCD case), $SU(2n)/SO(2n)$, and $SU(2n)/Sp(2n)$. In case of the one-particle-irreducible part, we obtain analytical expressions in terms of nine six-meson subamplitudes based on the flavor and group structures. We extend on our previous results [PRD 104 (2021):054046] obtained within the framework of $O(N+1)/O(N)$ non-linear sigma model, with N being the number of meson flavors. This work allows for studying a number of properties of six-particle amplitudes at one-loop level. It also serves as a first step in comparing with lattice-QCD results on three-pion scattering.

In-person participation

Yes

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