

Octet baryon and heavy meson interaction in chiral effective field theory

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Studies into baryon-meson interactions reveal significant insights into quantum chromodynamics (QCD) at hadronic scales, forming a critical foundation for advancing hadron spectroscopy. We calculate the effective potentials of octet baryon and heavy meson systems using the chiral effective field theory up to the next-to-leading order. The low energy constants (LECs) are correlated with those of the $\bar{N}N$ interaction using a quark-level Lagrangian approach. Our research provides new insights into several near-threshold charmed baryons [e.g., $\Lambda_c(2940)$, $\Xi_c(3055)$, and $\Omega_c(3188)$, etc.] around 3 GeV from the hadronic molecular perspective. We also identify several molecular states, designated as Ξ_c , within the mass range of 3100-3500 MeV.

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