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New insights into the nature of the Λ(1380) and Λ(1405) resonances away from the SU(3) limit

Thursday, 4 April 2024 10:00 (30 minutes)

In the KbarN-piSigma coupled-channel system, two resonance states of the Lambda(1405) and Lambda(1380) states are considered to appear in the same physical Riemann sheets. To investigate the origin of these states, the detailed knowledge on the interaction is required. In this talk, we discuss the pole positions at the unphysical quark masses which can be accessed in the lattice QCD calculations. We consider the detailed interpolation of the chiral dynamics model between the SU(3) limit and the physical point. We find that these states have always two different poles for any SU(3) limit, one in singlet and the other in octet. We show that the accidental symmetry of the two octets due to the leading order Weinberg-Tomozawa term is broken by the next-to-leading order terms. Furthermore, the interchange of the two trajectories of the Λ(1380) and the Λ(1405) away from the SU(3) limit at next-to-leading order.

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