

Hyperon non-leptonic decays in χ PT, revisited

Thursday, 17 November 2022 09:15 (60)

Though weak non-leptonic decays of hyperons - strange baryons - have been investigated before, an update is urgently needed in view of recent significant measurements from the BESIII collaboration. Only with such an update, future high-precision data of weak non-leptonic decays can be properly interpreted. Such hadronic decays are characterized by two distinct contributions to the decay amplitude, called S- and P-wave.

Within the framework of chiral perturbation theory (χ PT), such L-wave amplitudes can be computed: we do so up to one-loop corrections, noting also that in recent years their relative size to the tree-level contributions was differently interpreted. The general consensus is that weak non-leptonic hyperon decays are characterized by two contributions with polar behavior under approximate SU(3) symmetry.

This project aims at reviewing such calculations in the light of the recent updates on the measurement of the decay parameter $\alpha\Lambda$, directly connected to the above-mentioned spherical-wave amplitudes. A recalculation of such lowest order contributions and their corrections is hence needed, since it might lead to a new level of agreement with experiment. As an additional bonus, our aspiration is to reduce the numerous different approaches to the best fitting description of such decays.

Presenter(s) : SALONE, Nora