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On the possible existence of a $S=-3, I=1$ pentaquark

In this exploratory work we analyze the possible existence of a strangeness $S = -3$, isospin $I = 1$ pentaquark state P_{sss} generated dynamically from the $\bar{K}\Xi$ interaction. We employ a unitarized scheme in coupled channels based on the chiral Lagrangian expanded up to next-to-leading order (NLO), and show that the inclusion of the NLO terms can be crucial to provide the necessary attraction that favors the existence of such triply strange pentaquark. The $\bar{K}\Xi$ femtoscopic correlation functions are calculated as example of a possible experimental measurement in which a direct signal of the P_{sss} state could be observed.

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