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Weak Decays of Doubly Heavy Baryons

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We calculate the weak decay form factors of doubly-heavy baryons using three-point QCD sum rules. The Cutkosky rules are used to derive the double dispersion relations. We include perturbative contributions and condensation contributions up to dimension five, and point out that the perturbative contributions and condensates with lowest dimensions dominate. An estimate of part of gluon-gluon condensates show that it plays a less important role. With these form factors at hand, we present a phenomenological study of semileptonic and nonleptonic decays in the factorization approach. Branching ratios are predicted and many of them are found sizable. The future experimental facilities can test these predictions, and deepen our understanding of the dynamics in decays of doubly-heavy baryons.

Collaboration name

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