

Heavy Hybrid Decays to Quarkonia

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The decay rates of the $X Y Z$ exotics discovered in the heavy quarkonium sector are crucial observables for identifying the nature of these states. Based on the framework of nonrelativistic effective field theory, we calculate the rates of semi-inclusive decays of heavy quarkonium hybrids into standard heavy quarkonia. We compute the contributions to the decay rates at leading and subleading power in $1/m_Q$, where m_Q is the heavy quark mass. In particular, we compute for the first time spin-flipping decays and explore heavy quark symmetry breaking in exotic decays. We compare our predictions with experimental data of inclusive decay rates for candidates of heavy hybrids.

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