

Two-pion emission decays of singly heavy baryon

We investigate two-pion emission decays of singly charmed and bottom baryons. Our study includes both sequential decays through intermediate states and direct decays, with coupling constants estimated using the quark model and chiral-partner scheme. Examining recent Belle measurements for $\Lambda_c(2625)^+$, we confirm its assignment as a λ -mode excitation with $J^P = 3/2^-$. We also predict decay patterns for other states. The observed asymmetry in the $\pi\pi$ mass distribution highlights the role of the direct process, reflecting the chiral-partner structure. However, the direct process is less significant in three-body decays unless S -wave resonances are suppressed. Further experiments are needed to test our predictions and explore the structure of heavy baryons.

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