

# Lifetimes of doubly charmed baryons

*Wednesday 23 April 2025 19:00 (5 minutes)*

We present a theoretical background of heavy hadron decays within the heavy quark expansion and phenomenological implications to lifetimes of doubly charmed baryons by including available NLO QCD corrections and newly computed terms in the  $1/m_c$  series. Heavy hadron decays are treated using the effective weak hamiltonian and perturbative and nonperturbative effects are decoupled into effective coupling constants and matrix elements of operators, respectively. While perturbative, short-distance effects, are well-known, the nonperturbative matrix elements of doubly charmed baryons have to be treated with care. We use the heavy quark expansion and non-relativistic QCD and evaluate them using different techniques. Our prediction for the lifetime  $\tau(\xi_{cc}^{++}) = (0.32 \pm 0.05)\text{ps}$  is consistent with the recent LHCb determination.

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**Session Classification:** Wine & cheese poster session

**Track Classification:** Poster