

Revisiting puzzles in lifetimes of single charmed hadrons

Monday 27 June 2022 14:30 (30 minutes)

We provide an extensive study of the lifetimes of singly charmed baryons and mesons, within the heavy quark expansion with all known corrections included.

We give our predictions for lifetimes, lifetime ratios, and semileptonic branching ratios of singly charmed baryons. Our results accommodate the experimentally-favoured hierarchy of singly charmed baryon lifetimes $\tau(\Xi_{0c}) < \tau(\Lambda_{+c}) < \tau(\Omega_{0c}) < \tau(\Xi_{+c})$ in contrast to earlier theoretical findings. Predictions for charmed meson lifetimes and semileptonic decay rates are in agreement with a recent comprehensive study and experimental results within uncertainties.

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Session Classification: Afternoon Session