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## Doubly charmed baryon decays in the quark model

*Thursday, July 20, 2023 4:30 PM (20 minutes)*

In 2022, doubly charmed baryon hadronic weak decay  $\Xi_{cc}^{++} \rightarrow \Xi_c^{'+} \pi^+$  was first observed by LHCb and its branching fraction relative to  $\Xi_{cc}^{++} \rightarrow \Xi_c^+ \pi^+$  was reported. In this talk we will introduce the study of charmed baryon decays  $\Xi_{cc}^{++} \rightarrow \Xi_c^{'+} \pi^+$  within the framework of the nonrelativistic quark model (NRQM). Factorizable amplitudes in terms of transition form factors, while nonfactorizable amplitudes arising from the inner  $W$  emission are evaluated in the pole model combining current algebra and expressed in terms of baryonic matrix elements and axial-vector form factors. All the nonperturbative parameters are then calculated in NRQM, relying on the harmonic oscillator parameters  $\alpha_\rho$  and  $\alpha_\lambda$  for the  $\rho$ - and  $\lambda$ -mode excitation. The measured ratio between the two decay modes can be well explained and decay asymmetries are predicted to be -0.78 and -0.89 for  $\Xi_c^+ \pi^+$  and  $\Xi_c^{'+} \pi^+$ , respectively. A comparison with other works will also be made.

### Consent

I do not consent to recording/broadcasting of my presentation.

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