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Analysis of Charmed Baryon Weak Decays in the Topological Diagram Approach

Monday, May 27, 2024 2:45 PM (15 minutes)

Inspired by the recent BESIII measurement of the decay asymmetry in the decay $\Lambda_c^+ \to \Xi^0 K^+$, we perform a global fit to the experimental data of two-body charmed baryon decays based on the topological diagrammatic approach (TDA) which has the advantage that it is more intuitive, graphic and easier to implement model calculations. The measured branching fractions and decay asymmetries are well accommodated in the TDA except for three modes, in particular, the predicted $calB(\Xi_c^0 \to \Xi^- \pi^+) = (2.83 \pm 0.10)\%$ is larger than its current value. Hence, the TDA is applied successfully to the charmed baryon sector for the first time. The predicted magnitudes of S- and P-wave amplitudes and their phase shifts are presented for measured and yet-observed modes which can be tested in forthcoming experiments.

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