

Contribution ID: 33

Type: contributed parallel talk

Combined analysis of D^+,D^0\to \bar{K}\pi\pi decays using isospin symmetry analyticity and unitarity

Tuesday 18 July 2023 15:00 (20 minutes)

We discuss some applications of isospin symmetry in the Cabibbo favoured $D \to \bar{K}\pi\pi$ decays. These processes are important for precision testing of the Standard Model and for hadronic physics. Combining isospin symmetry with a dispersive reconstruction theorem we derive a representation in terms of one-variable functions which allows one to predict all the $D \to \bar{K}\pi\pi$ amplitudes given inputs from one D^+ mode and one D^0 mode. From this, using dispersion relations and unitarity, we derive a set of Khuri-Treiman type integral equations which enable to take three-body rescattering effects into account. These could be more significant in D than in K or B decays. A first test of this approach is presented using experimental results on the $D^+ \to K_S \pi^0 \pi^+$ and the $D^0 \to K_S \pi^- \pi^+$ modes.

Consent

I consent to recording/broadcasting my presentation.

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Session Classification: Parallel A

Track Classification: decays