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

Tuesday, July 18, 2023 3:00 PM (20 minutes)

We discuss some applications of isospin symmetry in the Cabibbo favoured $D \rightarrow \bar{K}\pi\pi$ 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 $D \rightarrow \bar{K}\pi\pi$ 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 $D^+ \rightarrow K_S\pi^0\pi^+$ and the $D^0 \rightarrow K_S\pi^-\pi^+$ modes.

Consent

I consent to recording/broadcasting my presentation.

Primary author: MOUSSALLAM, Bachir (IJCLab, Université Paris-Saclay)

Presenter: MOUSSALLAM, Bachir (IJCLab, Université Paris-Saclay)

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