

# Dispersive meson-meson scattering amplitudes for final state interactions and giant CP violation in B to three light-meson decays at LHCb

Wednesday, 7 June 2023 17:20 (20 minutes)

The LHCb collaboration has recently reported the largest CP violation effect from a single amplitude, as well as other giant CP asymmetries in several BB-meson decays into three charmless light mesons. It is also claimed that this is predominantly due to  $\pi\pi\rightarrow KK^-\pi\pi\rightarrow KK^-$  rescattering in the final state, particularly in the 1 to 1.5 GeV region. In these analyses the  $\pi\pi\rightarrow KK^-\pi\pi\rightarrow KK^-$  amplitude is by default estimated from the  $\pi\pi\pi\pi$  elastic scattering amplitude and does not describe the existing  $\pi\pi\rightarrow KK^-\pi\pi\rightarrow KK^-$  scattering data. Here we show how the recent model-independent dispersive analysis of  $\pi\pi\rightarrow KK^-\pi\pi\rightarrow KK^-$  data can be easily implemented in the LHCb formalism. This leads to a more accurate description of the asymmetry, while being consistent with the measured scattering amplitude and confirming the prominent role of hadronic final state interactions, paving the way for more elaborated analyses.

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**Session Classification:** Hadron decays, production and interaction

**Track Classification:** Hadron decays, production and interactions