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Type: **Parallel-Goldstone Boson**

Dispersive approach to strong three-body decays of η and η' mesons

I present a dispersion-theoretical analysis of the strong three-body decays in the η and η' sector. Based on analyticity and unitarity the dispersion relations resum the leading $\pi\pi$ - and $\pi\eta$ -rescattering effects to all orders, with the resulting amplitudes being solely dependent on the respective two-body scattering phase shifts. Due to the small available phase space only three decay channels are physically allowed: the two isospin breaking transitions $\eta/\eta' \rightarrow 3\pi$ and the isospin conserving transition $\eta' \rightarrow \pi\pi\eta$. Combining our dispersive representation of $\eta \rightarrow 3\pi$ with ChPT constraints, a fit to the high-statistics A2 and KLOE-2 Dalitz-plot distributions enables us to extract the light-quark mass double ratio Q . We update our previous analysis of $\eta' \rightarrow \pi\pi\eta$ by performing fits to new high-statistics measurements from A2 and BESIII. For the process $\eta' \rightarrow 3\pi$, we include both elastic two-pion rescattering corrections to the isospin-breaking decay amplitude as well as the inelastic effect due to an isospin-conserving decay $\eta' \rightarrow \pi\pi\eta$ and subsequent isospin-breaking $\pi\eta \rightarrow \pi\pi$ rescattering. In this way, the inelastic contribution to the unitarity relation connects all three decays. The resulting dispersive description of $\eta' \rightarrow 3\pi$ is fitted to the first available measurements of the Dalitz-plot distributions from BESIII.

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