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CP violation in multi-body charmless b-hadron decays at LHCb

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Long-distance resonant dynamics along with a sizeable weak phase present in multi-body charmless b-hadron decays leads to a rich structure of CP violation as a function of the phase space. Amplitude analysis provides a deeper understanding of the mechanisms that generate strong phase variations, which are responsible for this effect. We present the amplitude analyses of $B^+ \rightarrow \pi^+ K^+ K^-$ and $B_s \rightarrow K_s K^\pm \pi^\mp$. For the former, CP asymmetries of the contributing quasi-two-body resonances are measured.

Charmless b-baryon decays represent a promising opportunity to make a first observation of CP violation in the baryonic sector. We also present the most recent measurements of four-body charmless b-baryon decays performed by LHCb.

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