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Measurements of CP violation in charmless two-body B decays at LHCb

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Direct and mixing-induced CP violation observables in charmless charged two-body B decays may provide valuable information in the quest for physics beyond the Standard Model. Owing to the large beauty production cross-section at the LHC and to the unique characteristics of the LHCb detector and trigger, unprecedented samples of such decays are becoming available. We present updated measurements of direct CP violation in $B_0(s) \rightarrow K \pi$ decays as well as of direct and mixing-induced CP violation in $B_0 \rightarrow \pi^+ \pi^-$ and $B_0 \rightarrow K^+ K^-$ decays. Furthermore, we report measurements of the branching fractions of these decays, notably including those of the annihilation modes $B_0 \rightarrow K^+ K^-$ and $B_0 \rightarrow \pi^+ \pi^-$.

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