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## Results on direct CP Violation on B decays in LHCb

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Three recent results from the LHCb experiment on direct CP violation in the B and Bs systems are presented.

1) A study of  $B^\pm \rightarrow J/\psi\pi^\pm$  and  $B^\pm \rightarrow \psi(2S)\pi^\pm$  decays was performed with data corresponding to  $0.35 \text{ fb}^{-1}$  of proton-proton collisions at  $\sqrt{s} = 7 \text{ TeV}$ . No evidence of direct CP violation is seen.

2) Using the same data sample, also the  $K^\pm\pi^\mp$  final state is analysed. First evidence of CP violation in the decays of  $B_s^0$  mesons to  $K^\pm\pi^\mp$  pairs is reported:  $ACP(B_s^0 \rightarrow K\pi) = 0.27 \pm 0.08 \text{ (stat)} \pm 0.02 \text{ (syst)}$ , with a significance of  $3.3\sigma$ .

3) On the full 2011 dataset of  $1 \text{ fb}^{-1}$ , the decays  $B^\pm \rightarrow DK^\pm$  and  $B^\pm \rightarrow D\pi^\pm$  were analyzed, where the D is reconstructed in the two-body final states:  $KK$ ,  $K\pi$  and  $\pi\pi$ . Measurements of several observables are made, that bear significance to a measurement of CKM angle  $\gamma$ . This includes the first observation of the suppressed mode:  $B^\pm \rightarrow [\pi^\pm K^\mp]DK^\pm$ . In a combined fit to all the modes  $DK^\pm$  considered, CP -violation is observed with a significance of  $5.8\sigma$ .

### Summary

Three recent results from the LHCb experiment on direct CP violation in the B and Bs systems are presented.

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**Classification de Session:** Heavy flavour and charm physics

**Classification de thématique:** Experiment