

Supplementary material for LHCb-PAPER-2014-064

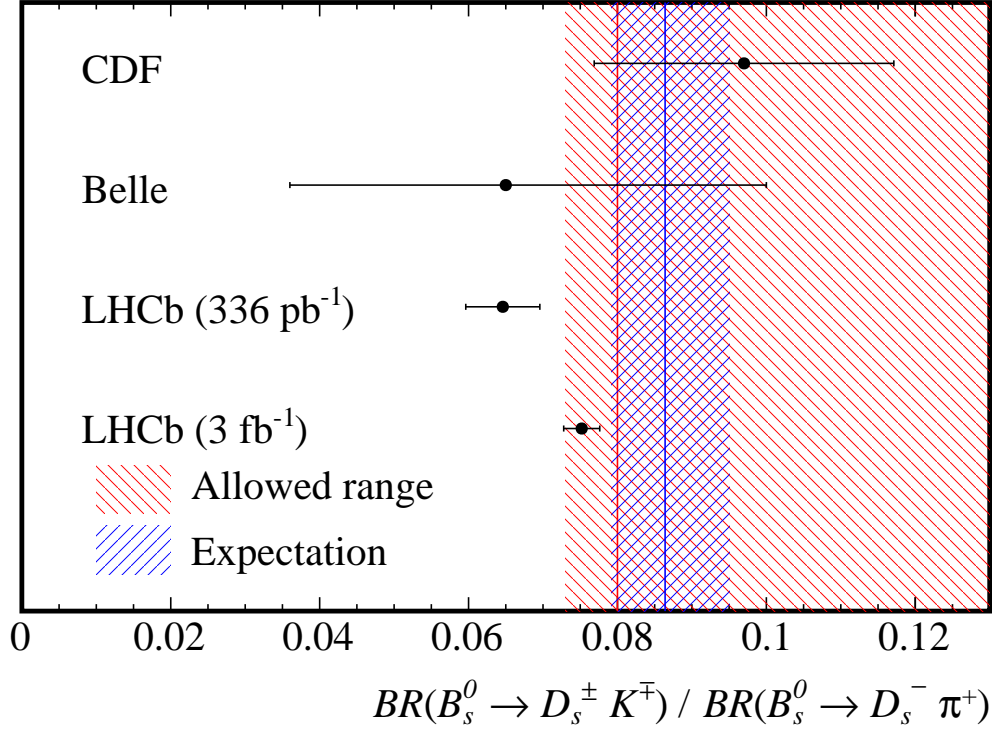


Figure 1: Comparison of the ratio of branching fractions $\mathcal{B}(B_s^0 \rightarrow D_s^\mp K^\pm) / \mathcal{B}(B_s^0 \rightarrow D_s^\mp \pi^\pm)$ presented in this paper to the previous LHCb result [1] and results from CDF [2] and Belle [3], along with the theoretical expectation as determined in Ref. [4]. The red vertical line and band indicate the theoretical lower bound, $\mathcal{B}(B_s^0 \rightarrow D_s^\mp K^\pm) / \mathcal{B}(B_s^0 \rightarrow D_s^\mp \pi^\pm) \geq 0.080 \pm 0.007$, while the blue vertical line and band represent the theoretical expectation $\mathcal{B}(B_s^0 \rightarrow D_s^\mp K^\pm) / \mathcal{B}(B_s^0 \rightarrow D_s^\mp \pi^\pm) = 0.086^{+0.009}_{-0.007}$.

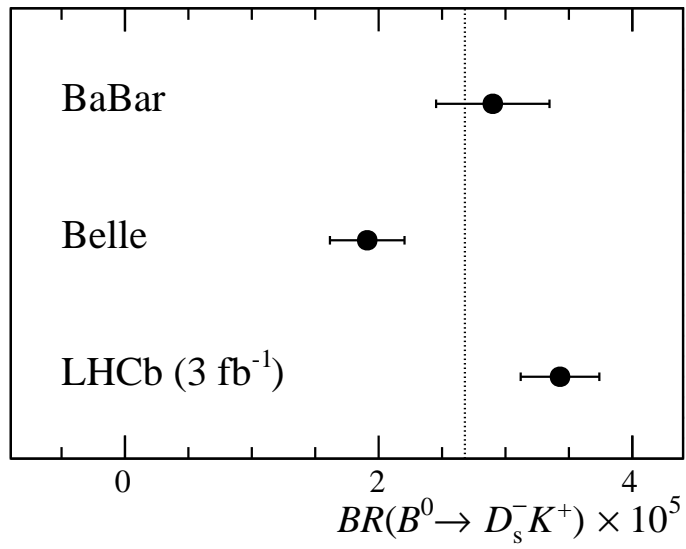


Figure 2: Comparison of branching fraction measurements for $B^0 \rightarrow D_s^- K^+$. The vertical dashed line indicates the weighted average of the three measurements.

References

- [1] LHCb collaboration, R. Aaij *et al.*, *Measurements of the branching fractions of the decays $B_s^0 \rightarrow D_s^\mp K^\pm$ and $B_s^0 \rightarrow D_s^- \pi^+$* , JHEP **06** (2012) 115, [arXiv:1204.1237](#).
- [2] CDF collaboration, T. Aaltonen *et al.*, *First observation of $\bar{B}_s^0 \rightarrow D_s^\pm K^\mp$ and measurement of the ratio of branching fractions $B(\bar{B}_s^0 \rightarrow D_s^\pm K^\mp) / B(\bar{B}_s^0 \rightarrow D_s^+ \pi^-)$* , Phys. Rev. Lett. **103** (2009) 191802, [arXiv:0809.0080](#).
- [3] Belle collaboration, R. Louvot *et al.*, *Measurement of the decay $B_s^0 \rightarrow D_s^- \pi^+$ and evidence for $B_s^0 \rightarrow D_s^\pm K^\pm$ in e^+e^- annihilation at $\sqrt{s} \sim 10.87$ GeV*, Phys. Rev. Lett. **102** (2009) 021801, [arXiv:0809.2526](#).
- [4] K. De Bruyn *et al.*, *Exploring $B_s \rightarrow D_s^{(*)\pm} K^\mp$ decays in the presence of a sizable width difference $\Delta\Gamma_s$* , Nucl. Phys. **B868** (2012) 351, [arXiv:1208.6463](#).