

A Supplementary material for LHCb-PAPER-2016-004

The results of the fit are shown separately for each subsample in Figs. 1, 2 and 3 for the $\Lambda\pi^+\pi^-$, $\Lambda K^\pm\pi^\mp$ and ΛK^+K^- final states. The results for the $\Lambda_b^0 \rightarrow \Lambda_c^+\pi^-$, $\Lambda_c^+ \rightarrow \Lambda\pi^+$ control mode are shown in Fig. 4.

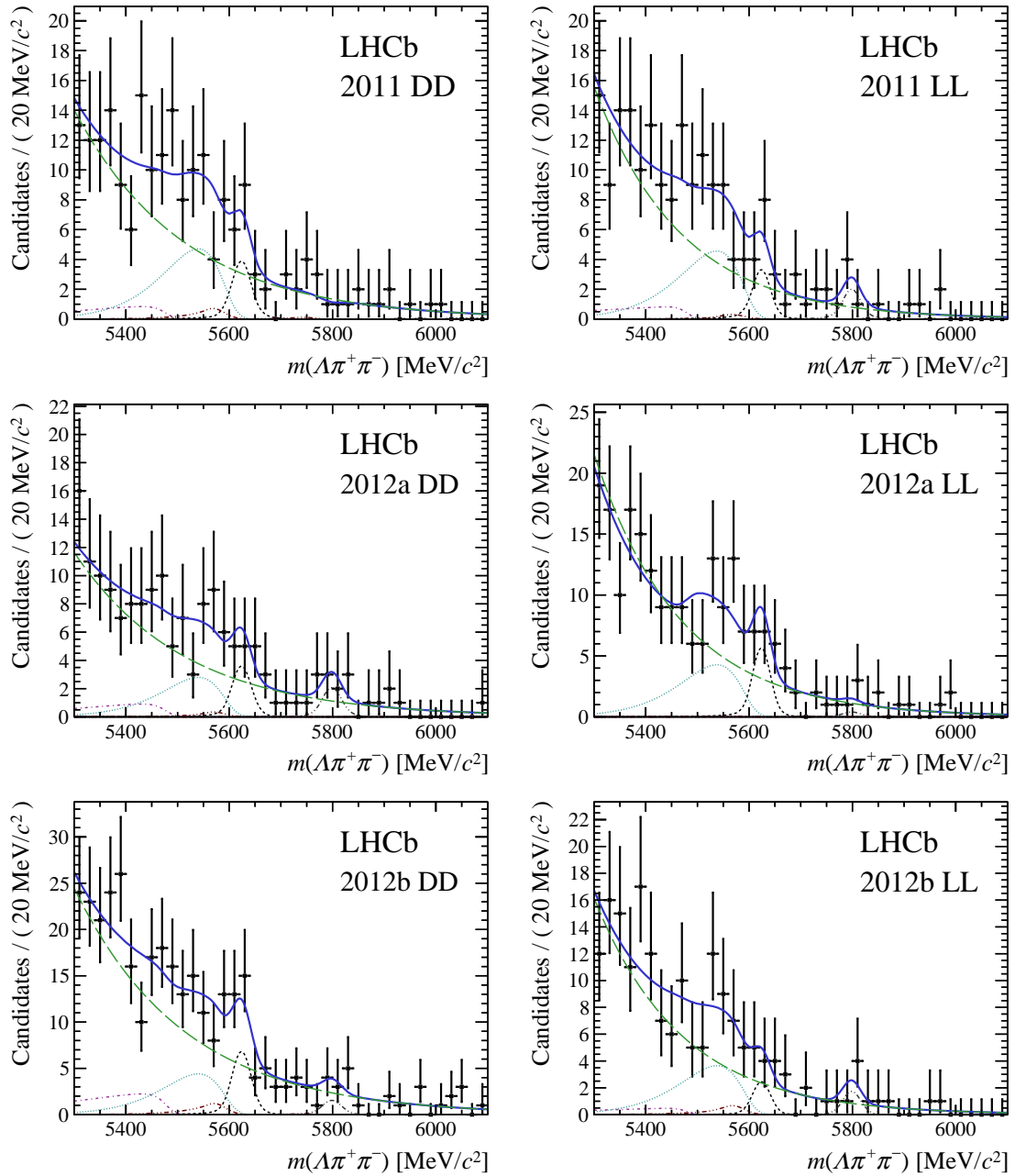


Figure 1: Results of the fit for the $\Lambda\pi^+\pi^-$ final state, in (left) downstream (DD) and (right) long (LL) reconstruction categories. From top to bottom the 2011, 2012a and 2012b subsamples are shown. Superimposed on the data are the total result of the fit as a solid blue line, the Λ_b^0 (Ξ_b^0) decay as a short-dashed black (double dot-dashed grey) line, cross-feed as triple dot-dashed brown lines, the combinatorial background as a long-dashed green line, and partially reconstructed background components with either a missing neutral pion as dot-dashed purple line or a missing soft photon as dotted cyan line.

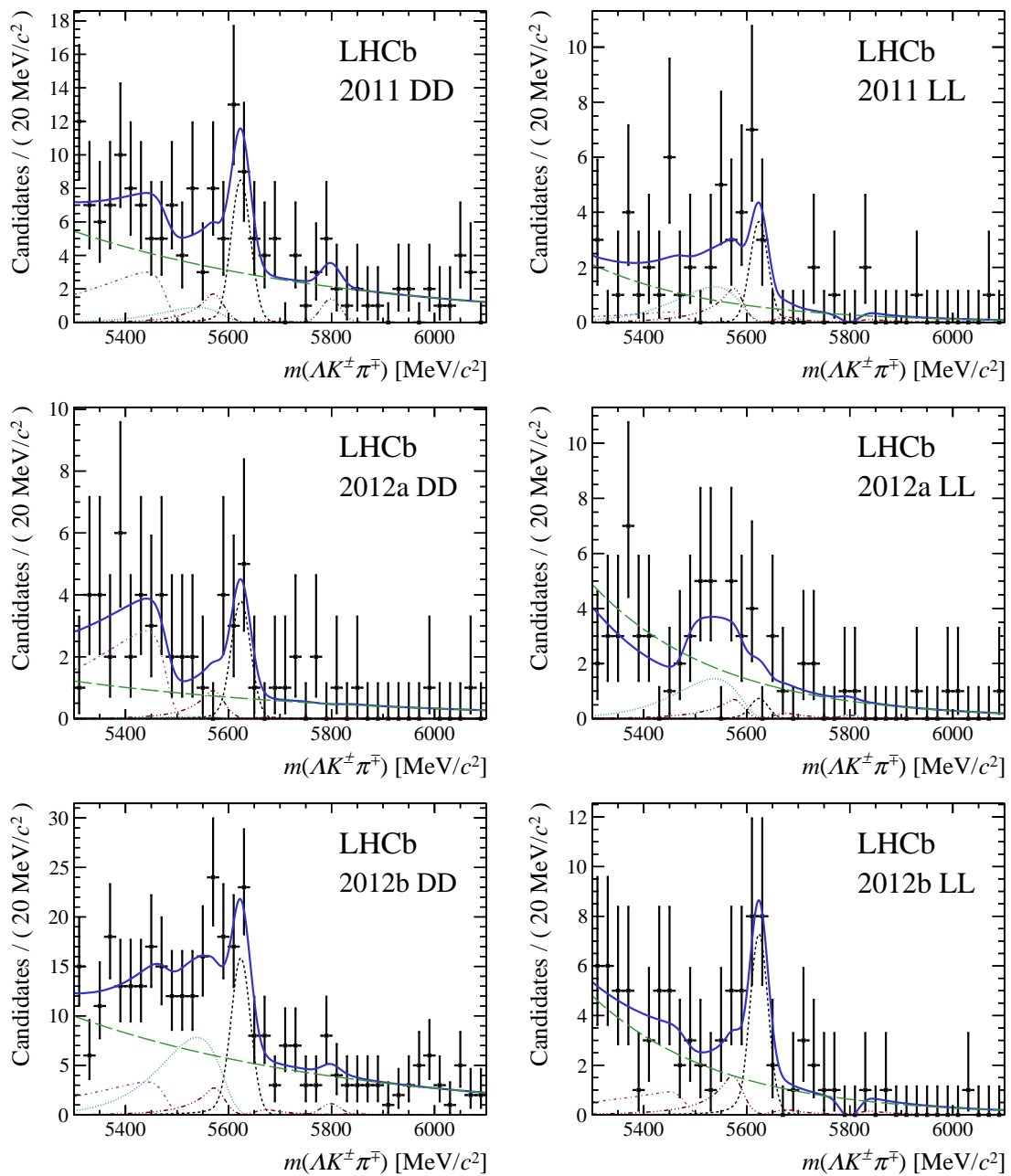


Figure 2: Results of the fit for the $\Lambda K^\pm \pi^\mp$ final state, in (left) downstream (DD) and (right) long (LL) reconstruction categories. From top to bottom the 2011, 2012a and 2012b subsamples are shown. Superimposed on the data are the total result of the fit as a solid blue line, the Λ_b^0 (Ξ_b^0) decay as a short-dashed black (double dot-dashed grey) line, cross-feed as triple dot-dashed brown lines, the combinatorial background as a long-dashed green line, and partially reconstructed background components with either a missing neutral pion as dot-dashed purple line or a missing soft photon as dotted cyan line.

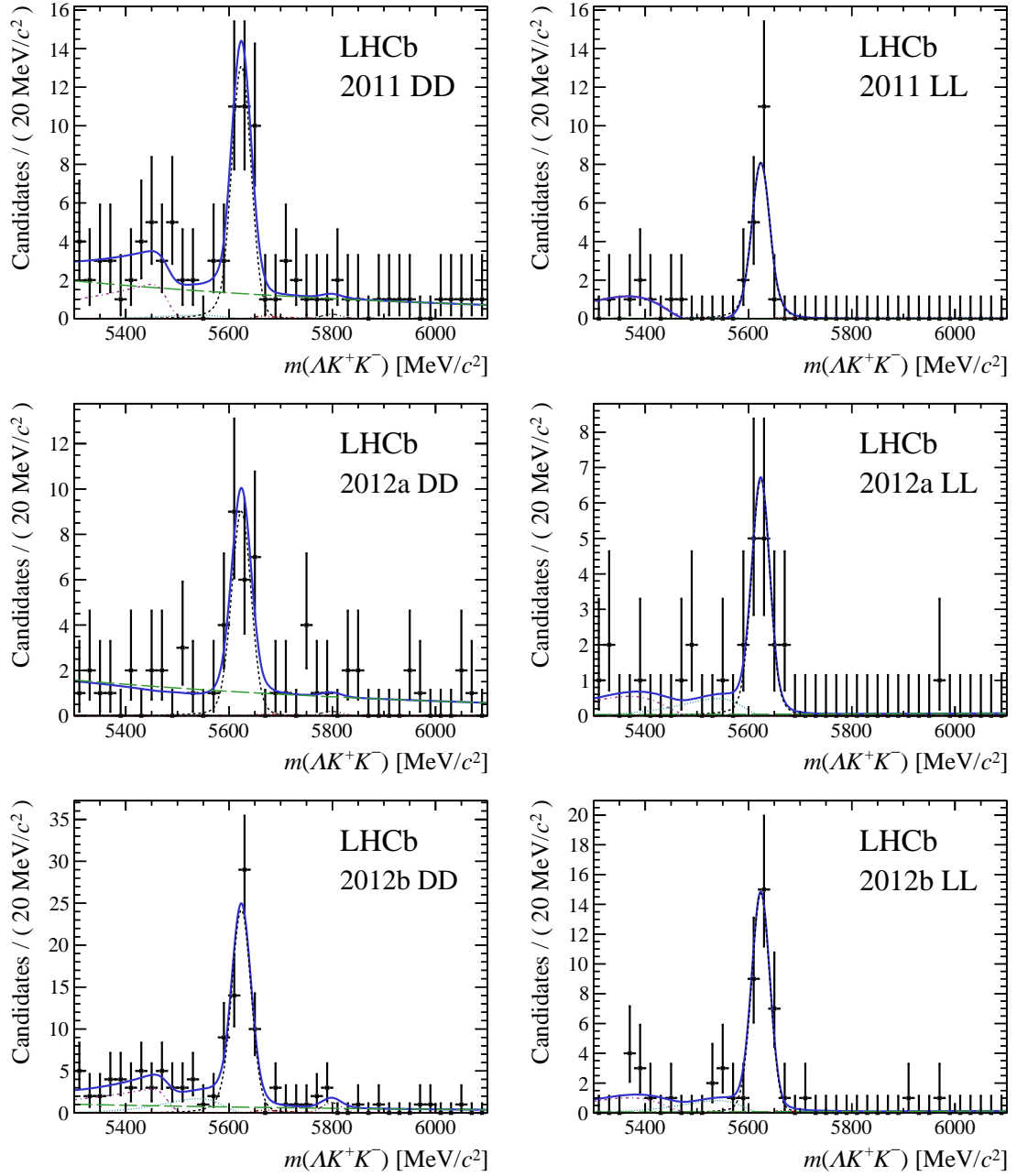


Figure 3: Results of the fit for the $\Lambda K^+ K^-$ final state, in (left) downstream (DD) and (right) long (LL) reconstruction categories. From top to bottom the 2011, 2012a and 2012b subsamples are shown. Superimposed on the data are the total result of the fit as a solid blue line, the Λ_b^0 (Ξ_b^0) decay as a short-dashed black (double dot-dashed grey) line, cross-feed as triple dot-dashed brown lines, the combinatorial background as a long-dashed green line, and partially reconstructed background components with either a missing neutral pion as dot-dashed purple line or a missing soft photon as dotted cyan line.

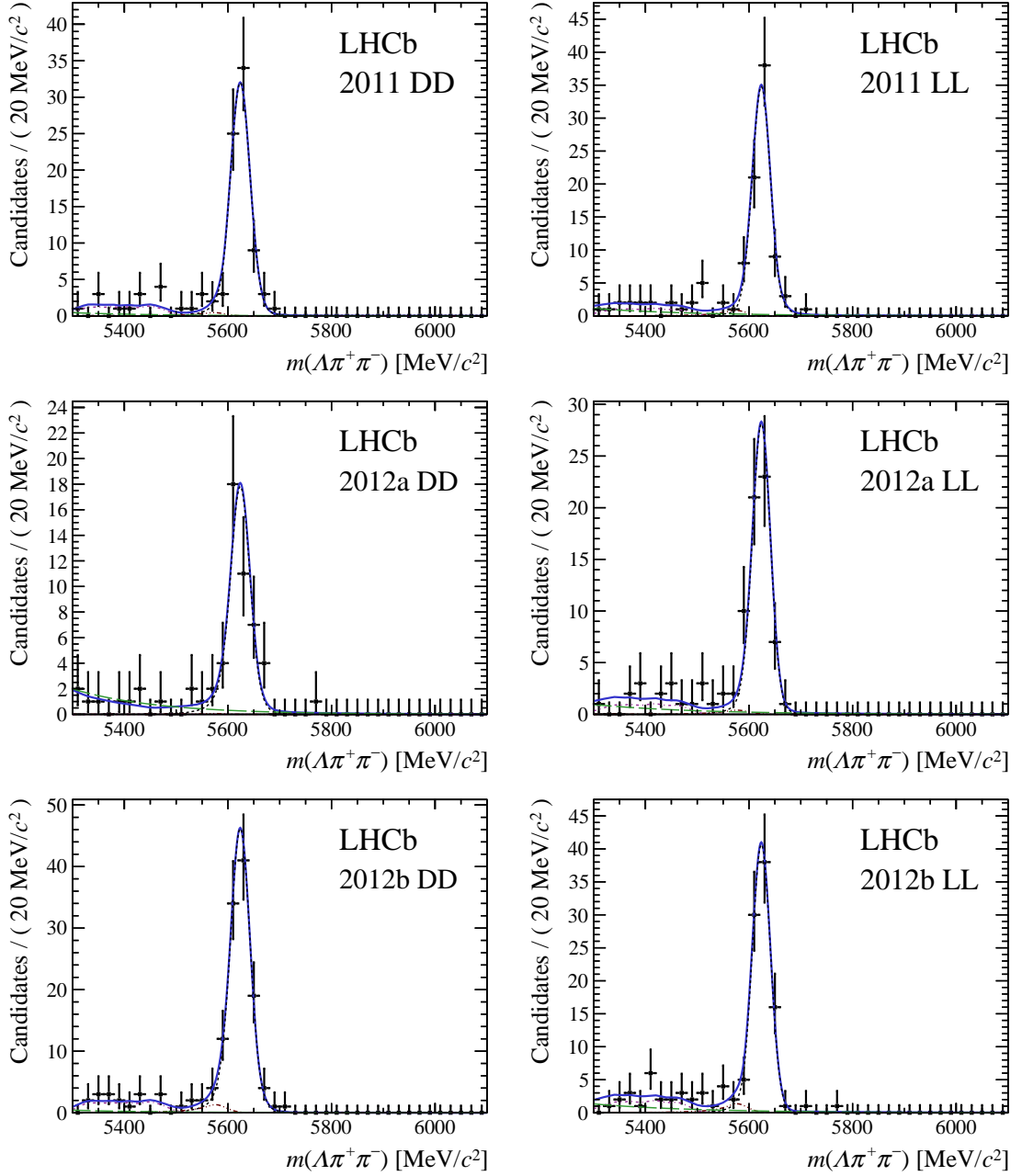


Figure 4: Results of the fit for the $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$, $\Lambda_c^+ \rightarrow \Lambda \pi^+$ control mode, in the (left) downstream (DD) and (right) long (LL) reconstruction categories. From top to bottom the 2011, 2012a and 2012b subsamples are shown. Superimposed on the data are the total result of the fit as a solid blue line, the Λ_b^0 decay as a short-dashed black line, cross-feed as a triple dot-dashed red line, the combinatorial background as a long-dashed green line, and partially reconstructed background components with a missing neutral pion (*e.g.*, produced along with a Λ_c^+ in the decay of a Σ_c^+) as dot-dashed purple line.