Supplementary material for LHCb-PAPER-2018-012
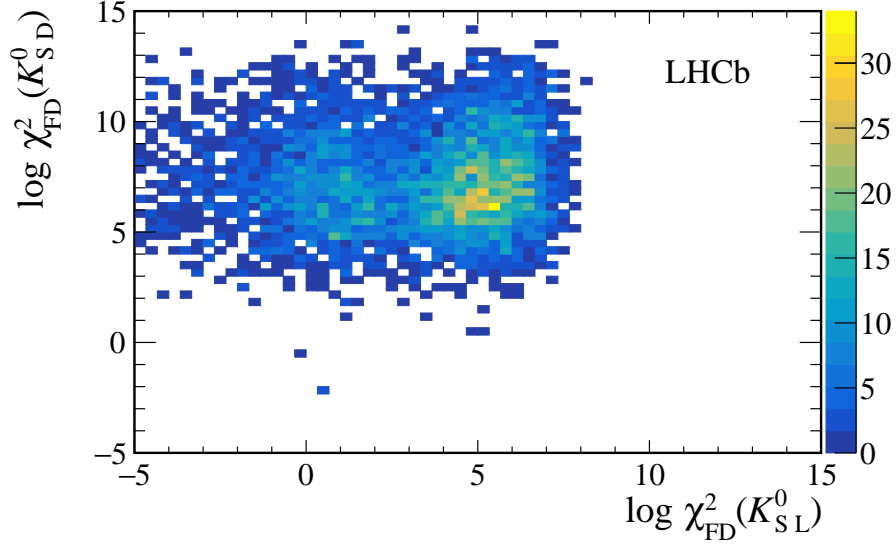

Figure 1: Two-dimensional plot of the logarithm of the K_S^0 flight significance ($\log \chi_{FD}^2$) for the two K_S^0 candidates in the LD subsample of $D^0 \to K_S^0 K_S^0$ decays. A clear separation of the $D^0 \to K_S^0 K_S^0$ signal is observed in the right region of the plot.
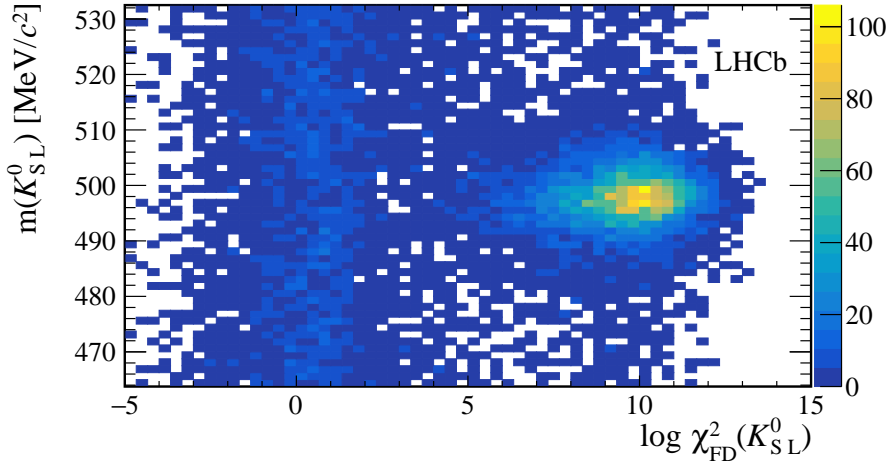

Figure 2: Two-dimensional plot of the logarithm of the K_S^0 flight significance ($\log \chi_{FD}^2$) vs. the K_S^0 mass for the long K_S^0 candidates in the LL subsample of $D^0 \to K_S^0 K_S^0$ decays.
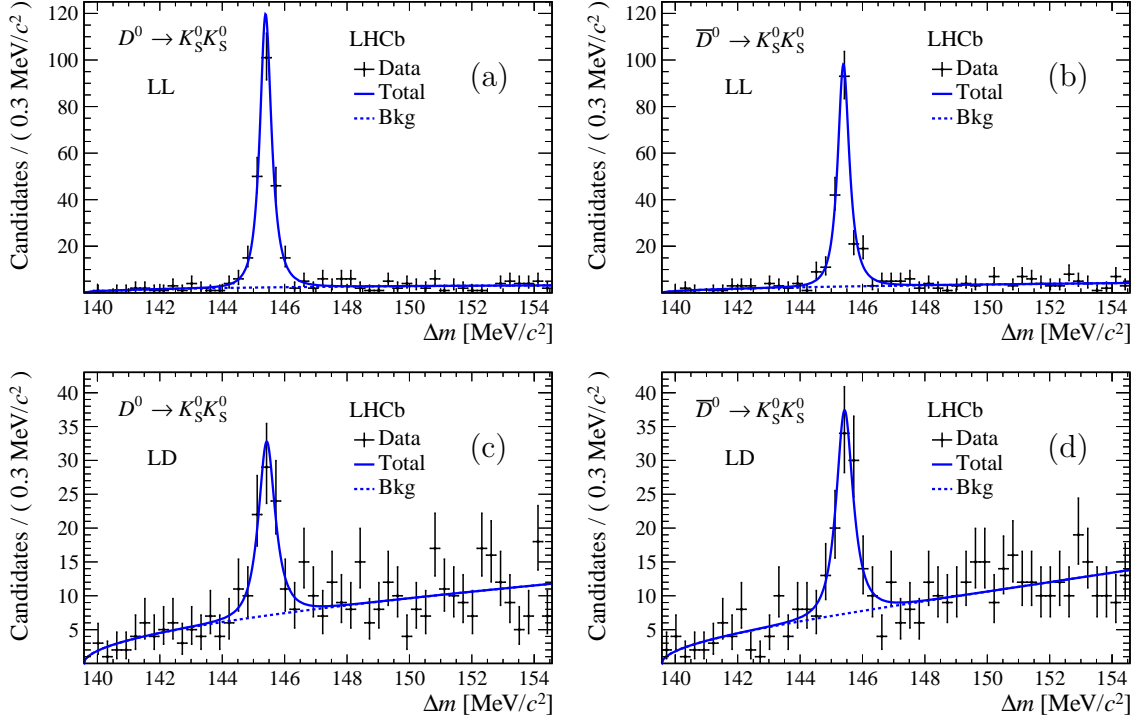
Figure 3: Results of fits to Δm distributions of $D^0 \to K_S^0 K_S^0$ candidates for MagDown magnet polarity. The fit to (a) $D^{*+} \to D^0\pi^+$ and (b) $D^{*-} \to \overline{D}^0\pi^-$ candidates for the LL sample and the fit to (c) $D^{*+} \to D^0\pi^+$ and (d) $D^{*-} \to \overline{D}^0\pi^-$ candidates for the LD sample are shown. The black crosses represent the data points, the solid blue curve is the full fit, and the dashed blue curve is the background component of the fit.
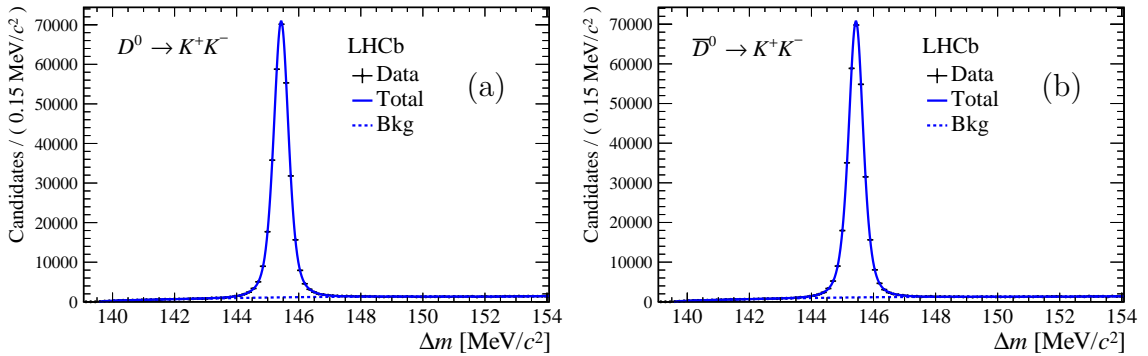

Figure 4: Results of fits to Δm distributions of $D^0 \to K^+K^-$ candidates for the MagDown magnet polarity. The fits to (a) $D^{*+} \to D^0\pi^+$ candidates and (b) $D^{*-} \to \overline{D}^0\pi^-$ candidates are shown. The black points represent the data the dashed blue and solid blue curves represent the background component and the full fit, respectively.

2

Figure 5: Results of fits to Δm distributions of $D^0 \to K^+K^-$ candidates for the MagDown magnet polarity. The fits to (a) $D^{*+} \to D^0\pi^+$ candidates and (b) $D^{*-} \to \overline{D}^0\pi^-$ candidates are shown. The black points represent the data the dashed blue and solid blue curves represent the background component and the full fit, respectively.
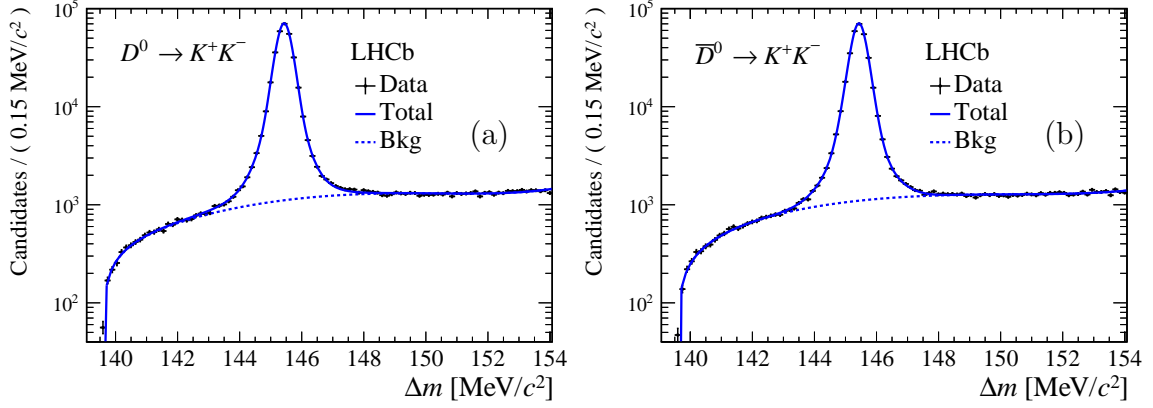

Figure 6: Results of fits to Δm distributions of $D^0 \to K^+K^-$ candidates for the MagUp magnet polarity. The fits to (a) $D^{*+} \to D^0\pi^+$ candidates and (b) $D^{*-} \to \overline{D}^0\pi^-$ candidates are shown. The black points represent the data the dashed blue and solid blue curves represent the background component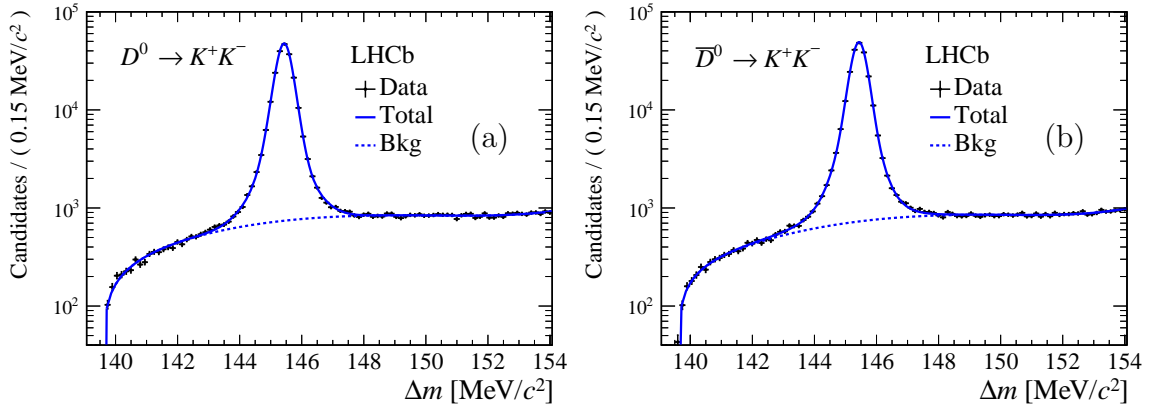 and the full fit, respectively.