Supplementary material for LHCb-PAPER-2018-038 (to be uploaded on CDS)
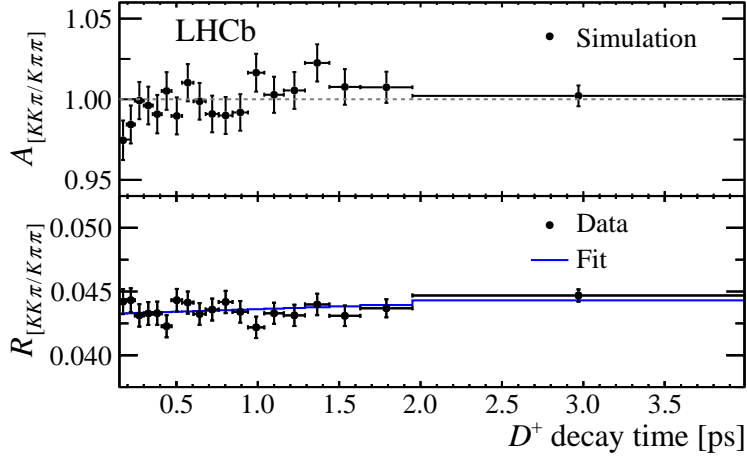

Figure 4: (Top) Ratio of decay-time acceptances for simulated $D^+ \to K^+K^-\pi^+$ over $D^+ \to K^-\pi^+\pi^+$ decays. (Bottom) Acceptance-corrected signal-yield ratio as a function of D^+ decay time, with fit projection overlaid. The measured value of Δ_Γ is $(-9.5 \pm 5.3) \times 10^{-3}\,\mathrm{ps}^{-1}$. This corresponds to an uncertainty on y_{CP} of 0.22%.
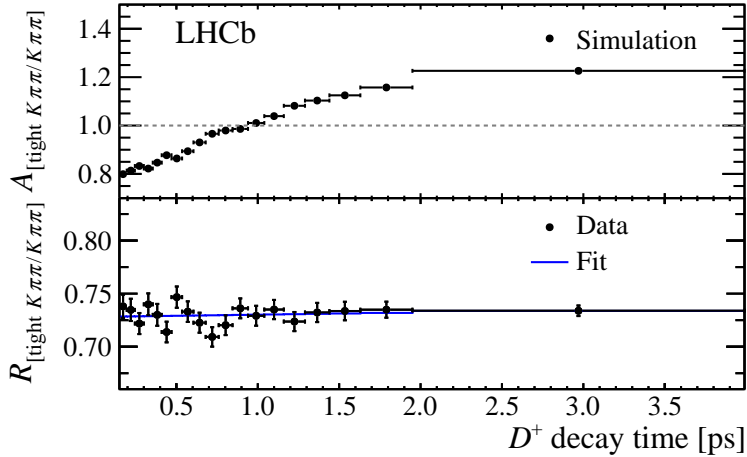

Figure 5: (Top) Ratio of decay-time acceptances for simulated $D^+ \to K^-\pi^+\pi^+$ decays selected with tight χ^2_{IP} requirements over $D^+ \to K^-\pi^+\pi^+$ decays selected with the default requirements. (Bottom) Acceptance-corrected signal-yield ratio as a function of D^+ decay time, with fit projection overlaid. The measured value of Δ_Γ is $(-2.9 \pm 3.4) \times 10^{-3}\,\mathrm{ps}^{-1}$. This corresponds to an uncertainty on y_{CP} of 0.14%.
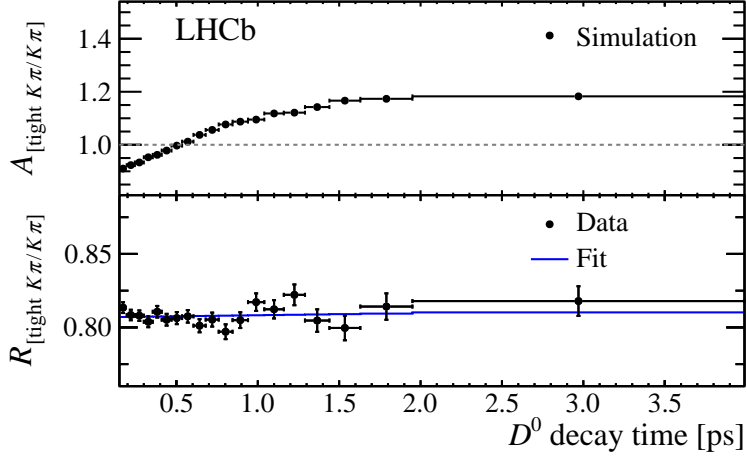
Figure 6: (Top) Ratio of decay-time acceptances for simulated $D^0 \to K^-\pi^+$ decays selected with tight χ^2_{IP} requirements over $D^0 \to K^-\pi^+$ decays selected with the default requirements. (Bottom) Acceptance-corrected signal-yield ratio as a function of D^0 decay time, with fit projection overlaid. The measured value of Δ_Γ is $(-1.8 \pm 3.3) \times 10^{-3}\,\mathrm{ps}^{-1}$. This corresponds to an uncertainty on y_{CP} of 0.14%.
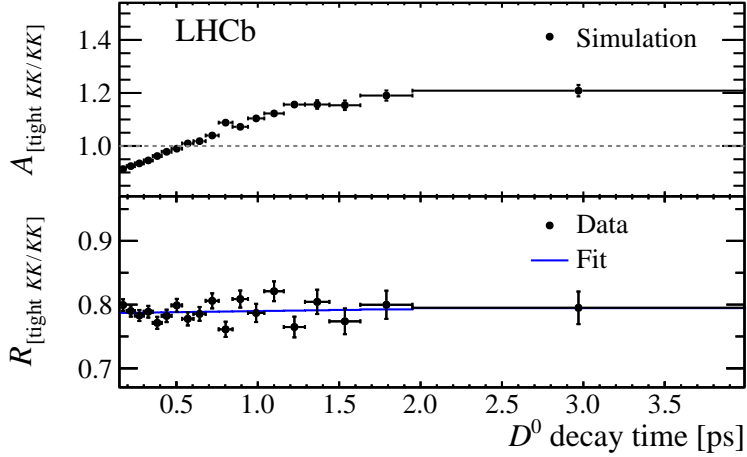

Figure 7: (Top) Ratio of decay-time acceptances for simulated $D^0 \to K^+K^-$ decays selected with tight χ^2_{IP} requirements over $D^0 \to K^+K^-$ decays selected with the default requirements. (Bottom) Acceptance-corrected signal-yield ratio as a function of D^0 decay time, with fit projection overlaid. The measured value of Δ_Γ is $(4.4 \pm 8.4) \times 10^{-3}\,\mathrm{ps}^{-1}$. This corresponds to an uncertainty on y_{CP} of 0.34%.
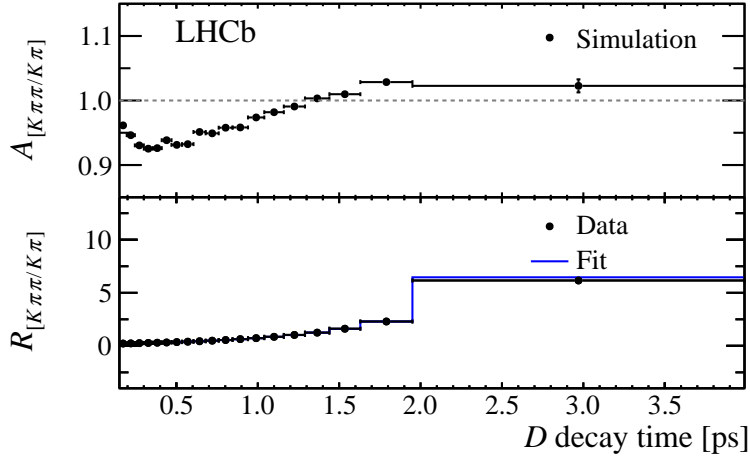
Figure 8: (Top) Ratio of decay-time acceptances for simulated $D^+ \to K^- \pi^+ \pi^+$ decays over $D^0 \to K^- \pi^+$ decays. (Bottom) Acceptance-corrected signal-yield ratio as a function of D decay time, with fit projection overlaid. The value of the ratio of D^+ and D^0 lifetimes is found to be 2.5141 ± 0.0082, in agreement with the expectation of 2.536 ± 0.019 [?].
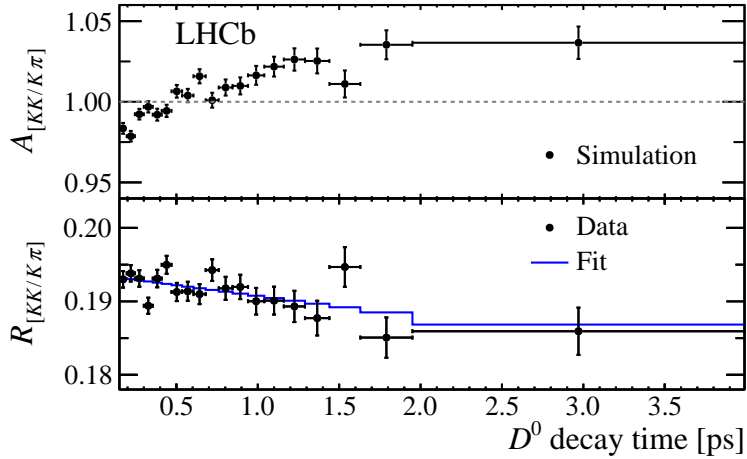

Figure 9: (Top) Ratio of decay-time acceptances for simulated $D^0 \to K^+ K^-$ over $D^0 \to K^- \pi^+$ decays. (Bottom) Acceptance-corrected signal-yield ratio as a function of D^0 decay time, with fit projection overlaid.
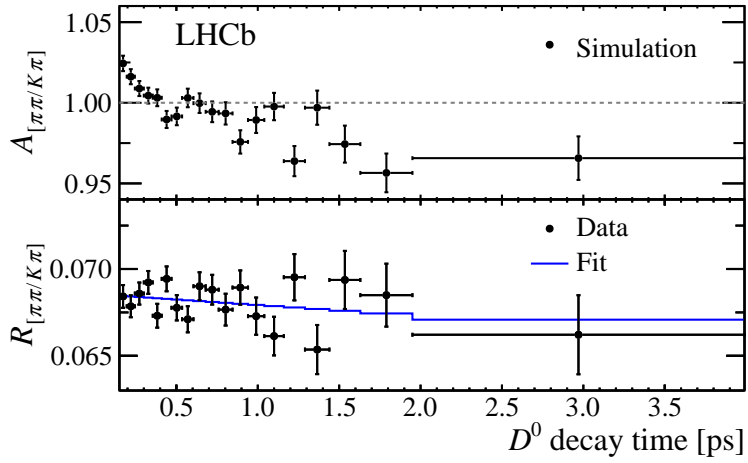
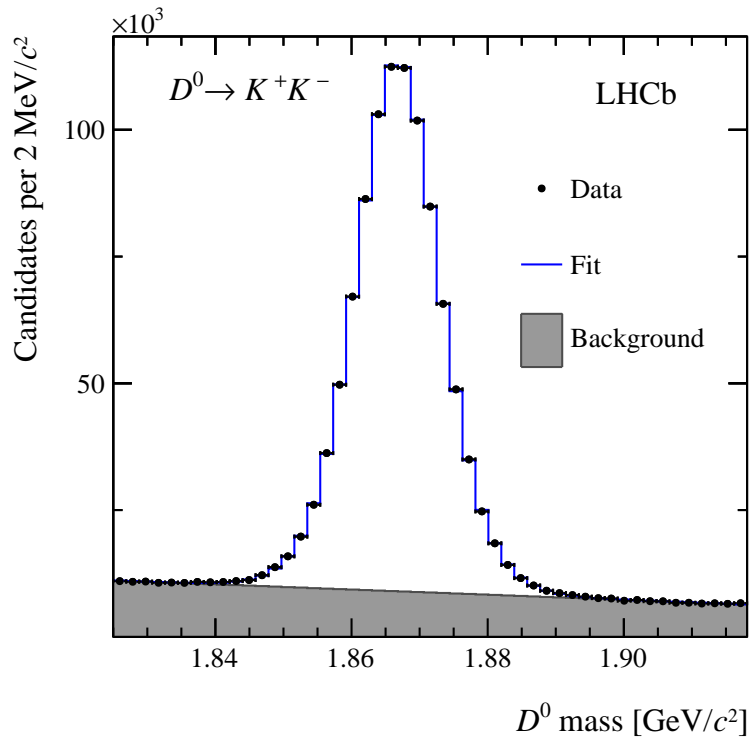Figure 10: (Top) Ratio of decay-time acceptances for simulated $D^0 \to \pi^+\pi^-$ over $D^0 \to K^-\pi^+$ decays. (Bottom) Acceptance-corrected signal-yield ratio as a function of D^0 decay time, with fit projection overlaid.

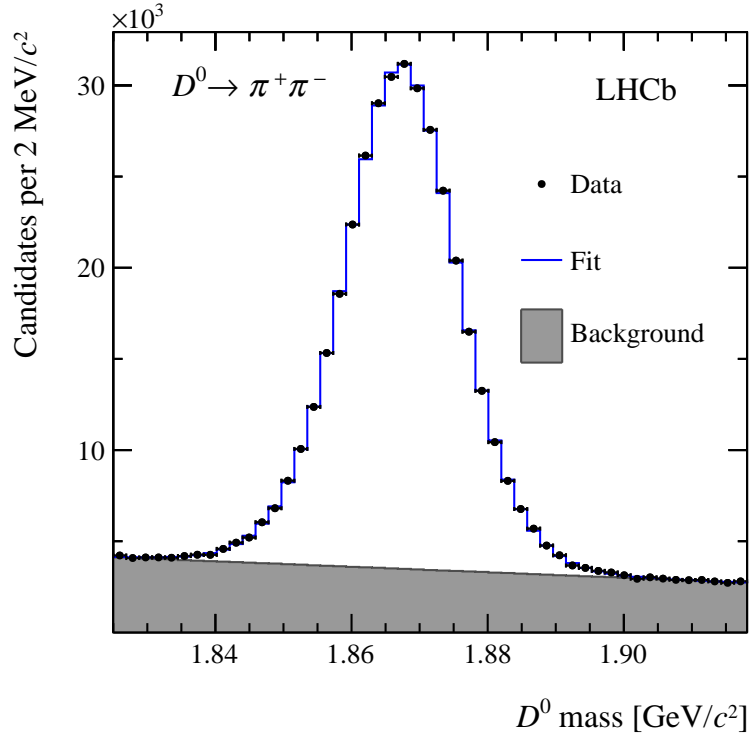Figure 11: Mass distribution of $D^0 \to K^+K^-$ candidates with fit projections overlaid.

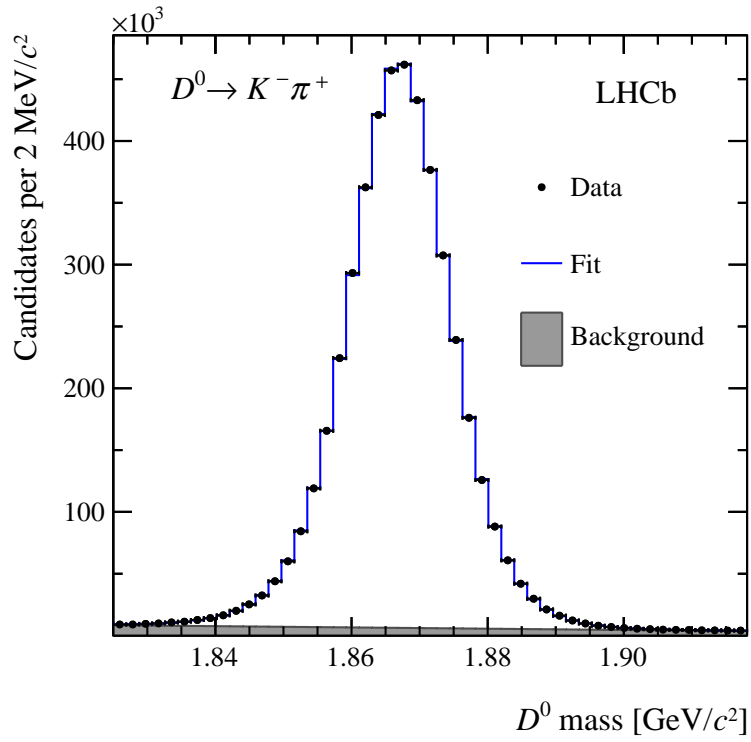Figure 12: Mass distribution of $D^0 \to \pi^+\pi^-$ candidates with fit projections overlaid.

Figure 13: Mass distribution of $D^0 \to K^-\pi^+$ candidates with fit projections overlaid.

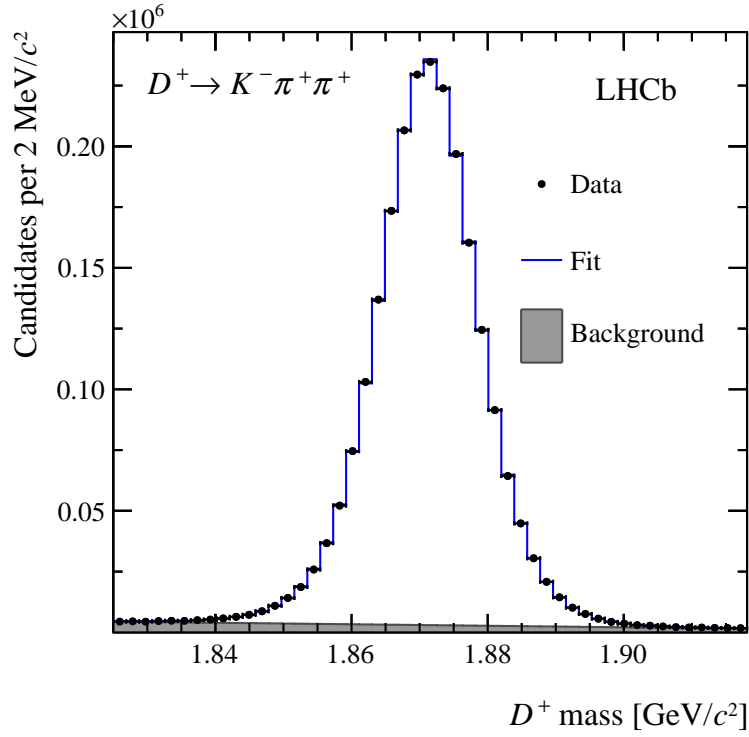Figure 14: Mass distribution of $D^+ \to K^- \pi^+ \pi^+$ candidates with fit projections overlaid.

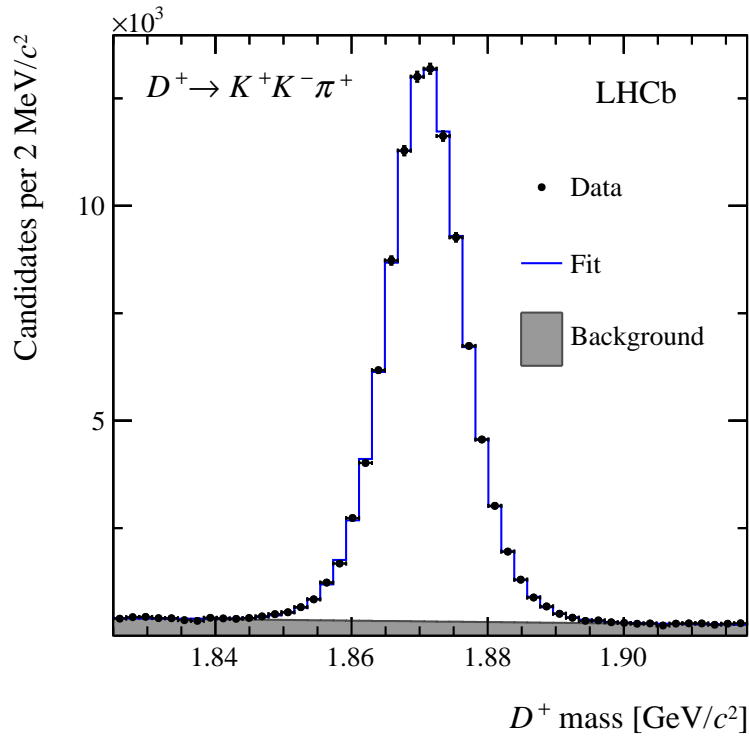Figure 15: Mass distribution of $D^+ \to K^+ K^- \pi^+$ candidates with fit projections overlaid.