

538 1 Supplementary material for LHCb-PAPER-2014-
539 048

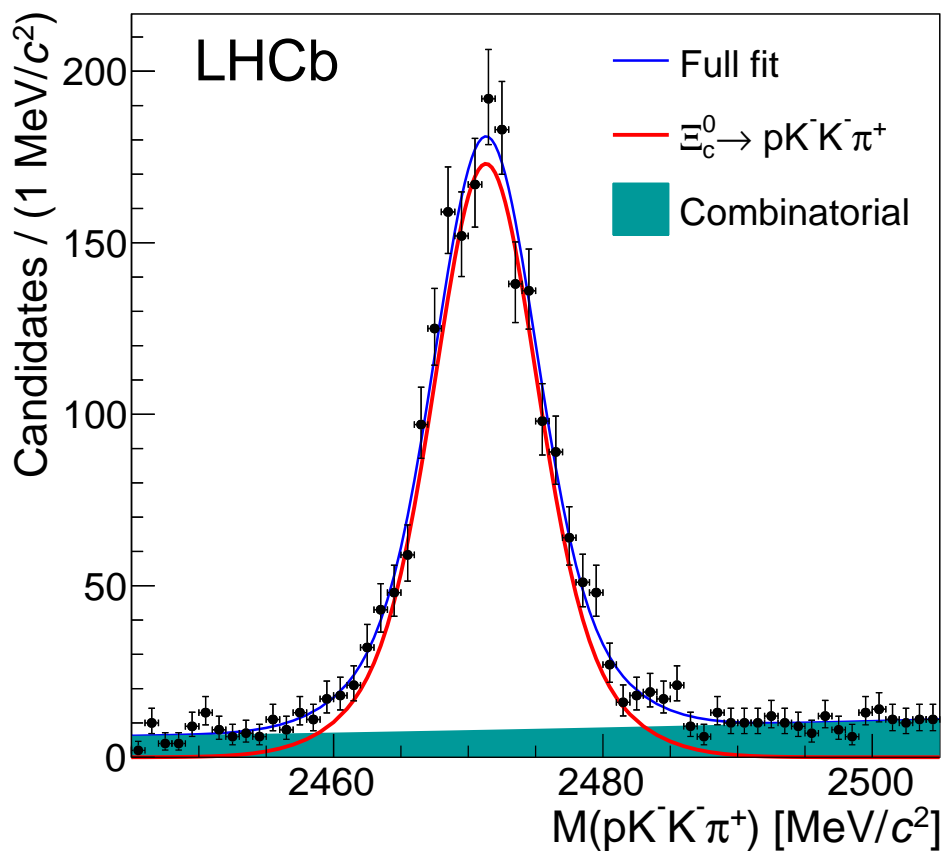


Figure 4: Invariant mass spectrum for $\Xi_c^0 \rightarrow p K^- K^- \pi^+$ candidates that form a Ξ_b^- candidate within $80 \text{ MeV}/c^2$ of the Ξ_b^- fitted mass.

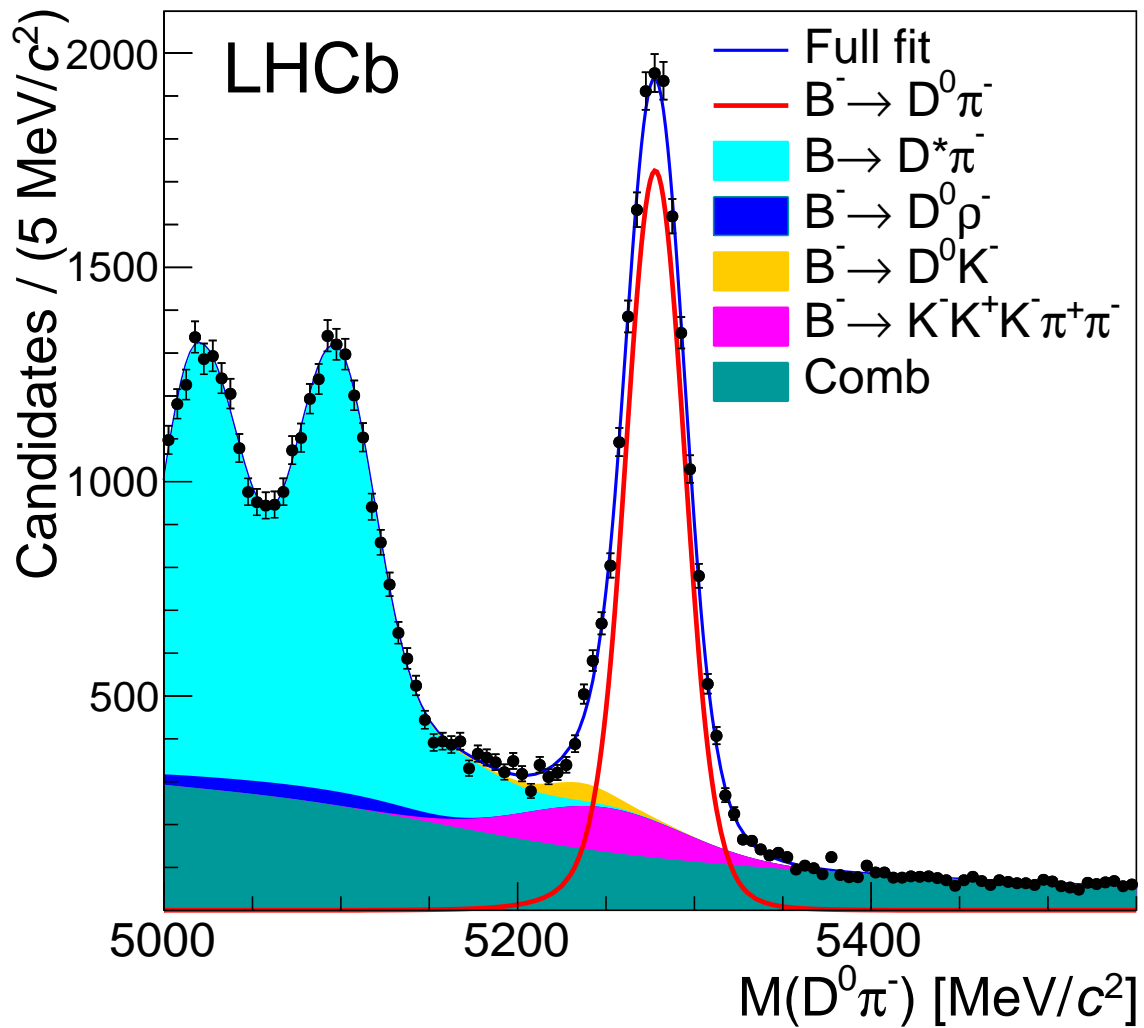


Figure 5: Invariant mass spectrum for $B^- \rightarrow D^0 \pi^-$ candidates, with $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$. The analysis is redone using this mode as a normalization mode to provide a cross-check of our nominal results using the $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ decay mode as a reference. The fitted mass difference is $M(\Xi_b^-) - M(B^-) = 518.72 \pm 0.51$ (stat) MeV/c², resulting in a Ξ_b^- mass of $M(\Xi_b^-) = 5797.98 \pm 0.51$ (stat) MeV/c².

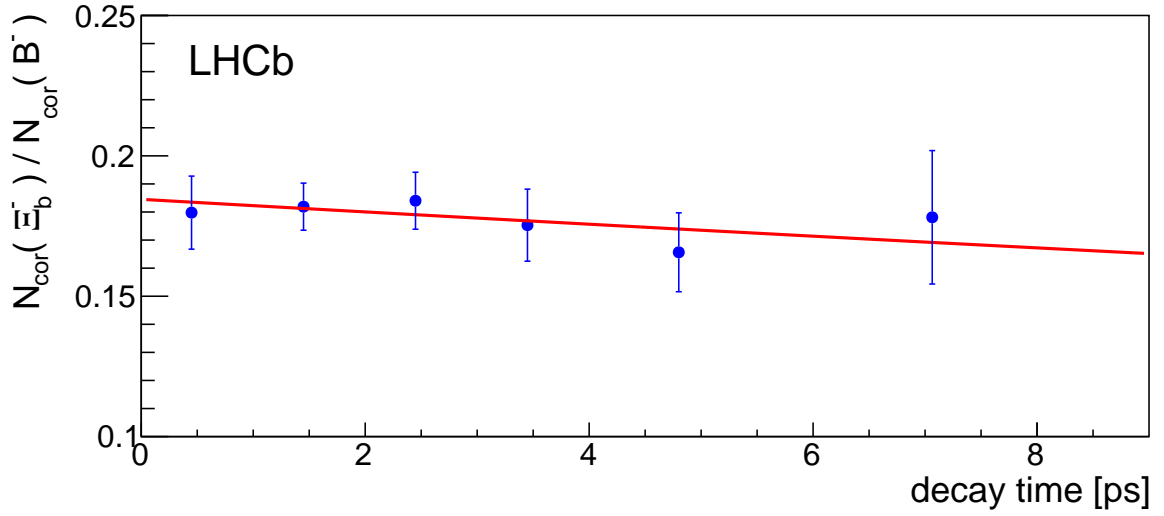


Figure 6: Corrected yield ratio, $N_{\text{cor}}(\Xi_b^-) / N_{\text{cor}}(B^-)$ in bins of decay time, along with the exponential fit. The uncertainties are statistical only. The fitted slope $\beta = -0.0123 \pm 0.0172$ (stat) ps^{-1} . The resulting lifetime using the B^- mode for normalization is $\tau(\Xi_b^-) = 1.609 \pm 0.045$ (stat).

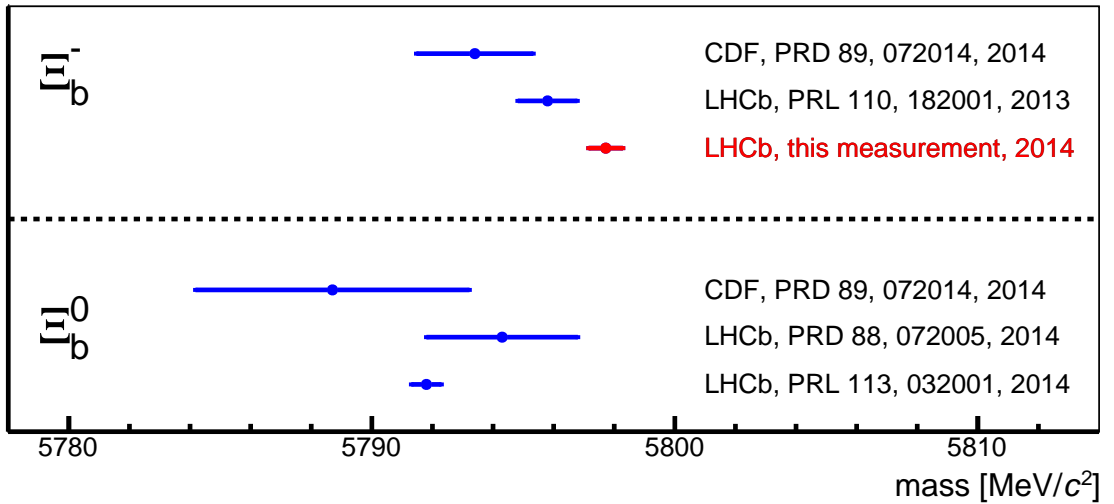


Figure 7: Comparison of measurements of the Ξ_b^- and Ξ_b^0 masses, along with this measurement.

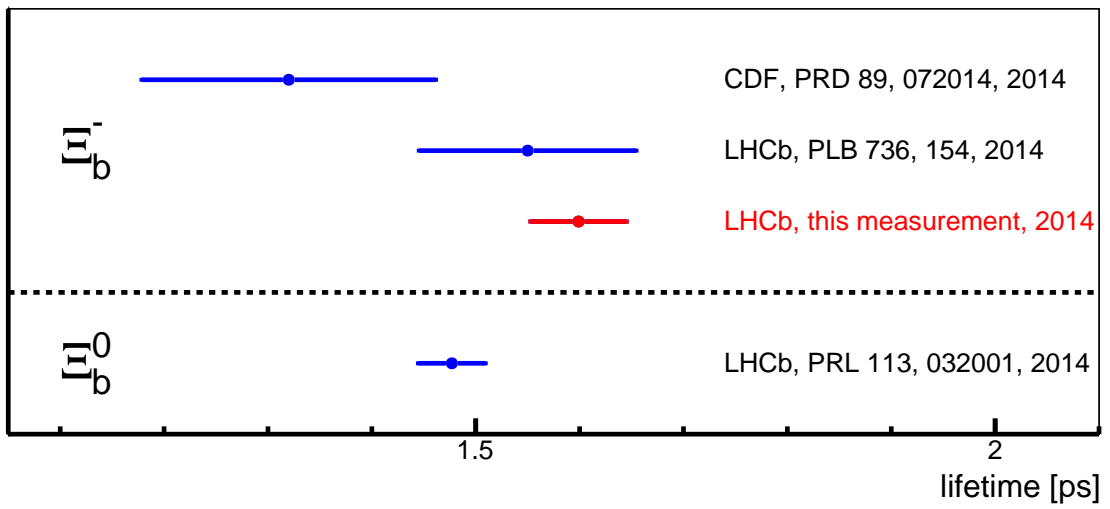


Figure 8: Comparison of measurements of the Ξ_b^- and Ξ_b^0 lifetimes, along with this measurement.