

8 Supplementary material for LHCb-PAPER-2020-037

This appendix contains supplementary material that will be posted on the public CDS record but will not appear in the paper.

8.1 Fits to simulated data

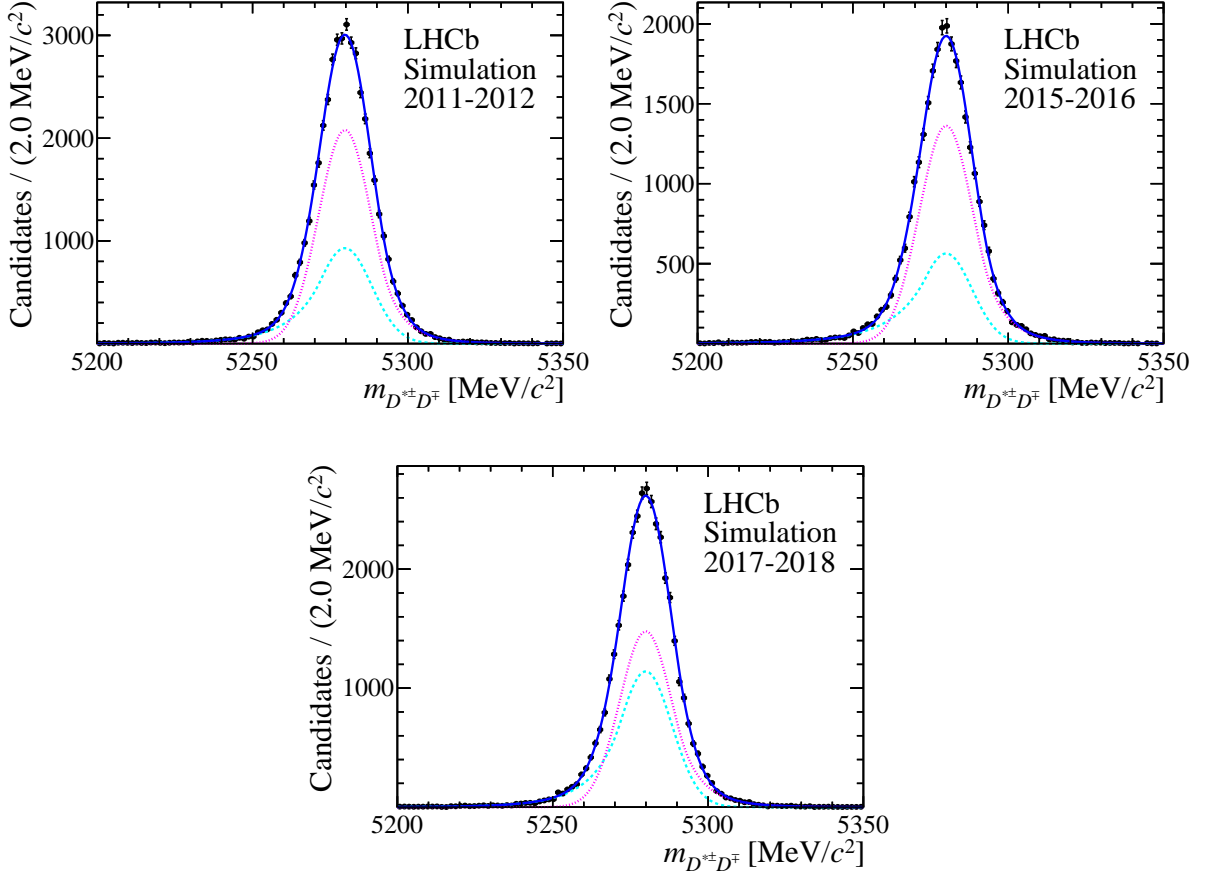


Figure 1: The $D^{*\pm}D^\mp$ mass distributions of simulated $B^0 \rightarrow D^{*\pm}D^\mp$ decays for (top) 2011–2012, (middle) 2015–2016 and (bottom) 2017–2018. The full fit projection is shown as the blue solid line. The signal model consists of two Crystal Ball functions, which are described by the cyan dashed and the magenta dotted lines.

6 8.2 Partially reconstructed backgrounds

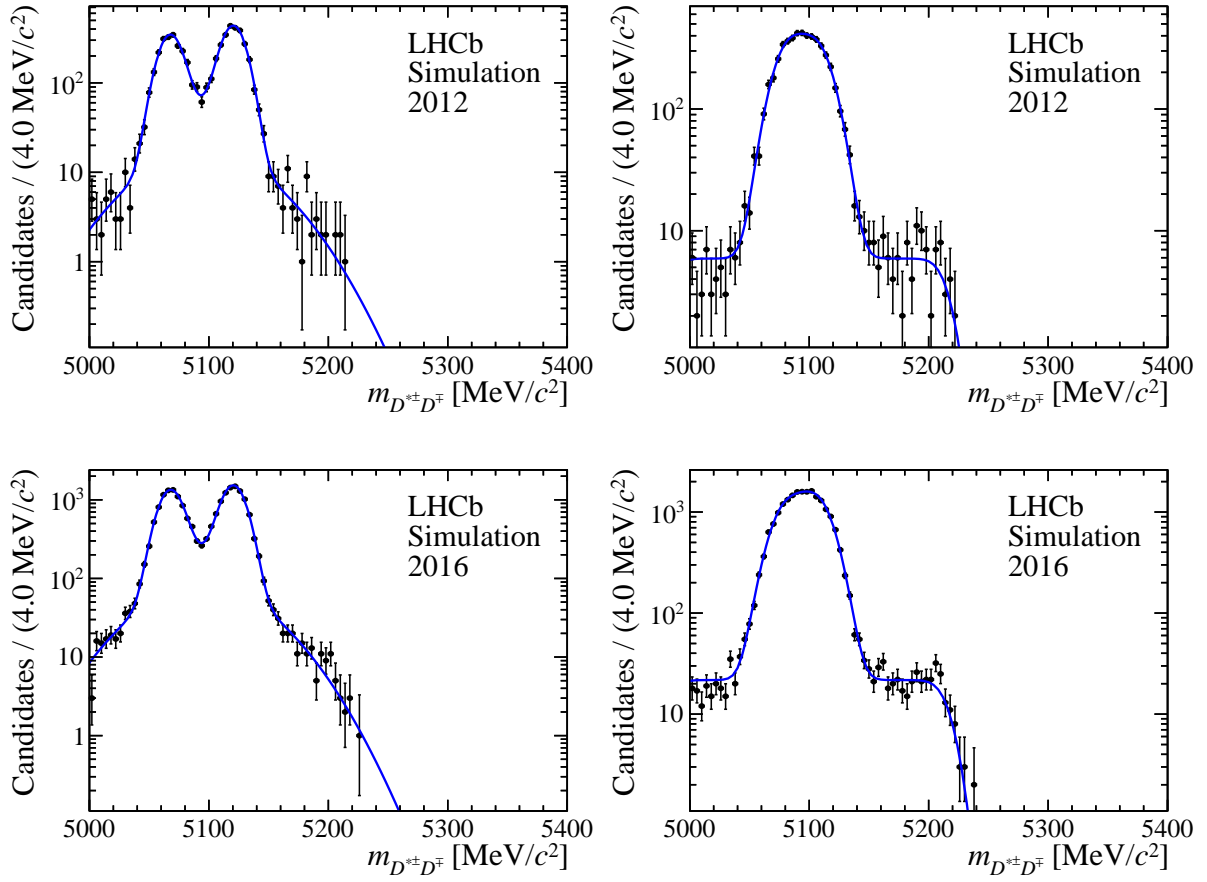


Figure 2: The mass distributions of simulated $B^0 \rightarrow D^{*+}D^{*-}$ decays reconstructed as $B^0 \rightarrow D^{*\pm}D^{\mp}$ for 2012 (top) and 2016 (bottom) overlaid with the projections of the fit. The left plots refer to the pure longitudinal polarisations and the right plots correspond to the pure transverse polarisations of the two $D^{*\pm}$ mesons.

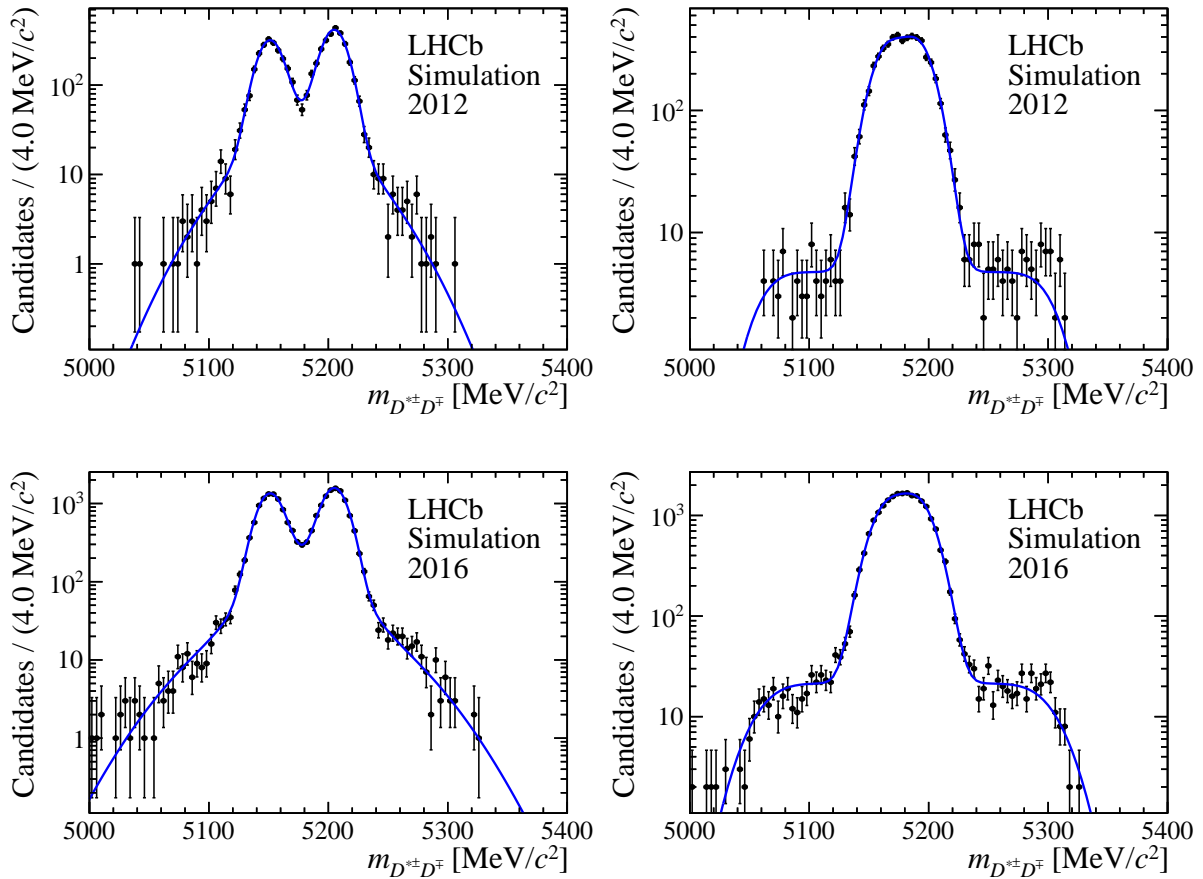


Figure 3: The mass distributions of simulated $B_s^0 \rightarrow D^{*+} D^{*-}$ decays reconstructed as $B^0 \rightarrow D^{*\pm} D^\mp$ for 2012 (top) and 2016 (bottom) overlaid with the projections of the fit. The left plots refer to the pure longitudinal polarisations and the right plots correspond to the pure transverse polarisation of the two $D^{*\pm}$ mesons.

7 8.3 $D^{*\pm}$ and D^\mp mass distributions

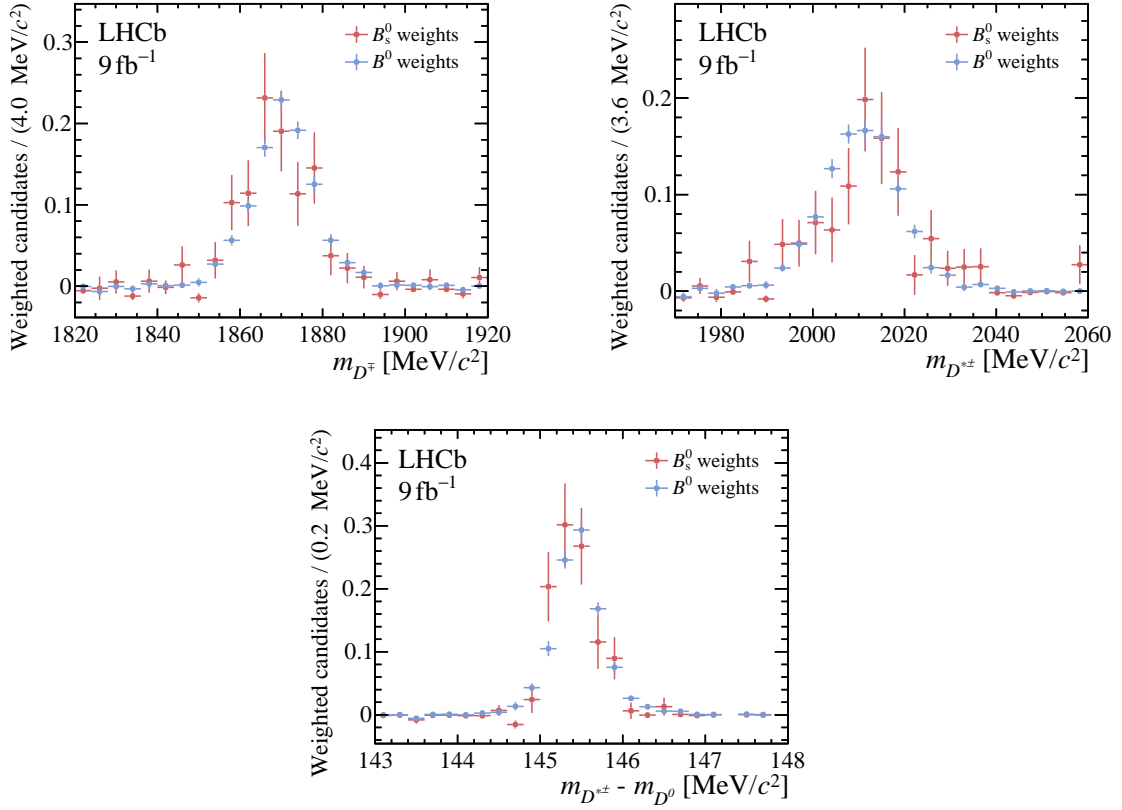


Figure 4: The normalised distributions of the (top left) mass of the weighted D^\mp candidates, (top right) mass of the weighted $D^{*\pm}$ candidates, and (bottom) mass difference of the weighted $D^{*\pm}$ and D^0 candidates with the combined data sample using the sPlot technique for B_s^0 candidates in red and B^0 candidates in blue.