Supplementary material for LHCb-PAPER-2016-029

Figure 1 shows the results of background-only fits to the $B_s^0\pi^\pm$ spectra with different minimum $p_{\rm T}(B_s^0)$ requirements. Figure 2 shows the $B_s^0\pi^\pm$ spectrum observed in the LHCb data, with a superimposed signal component with yield corresponding to $\rho_X^{\rm LHCb} = 8.6\,\%$, *i.e.* the central value of $\rho_X^{\rm D0}$ determined by the D0 collaboration [1].

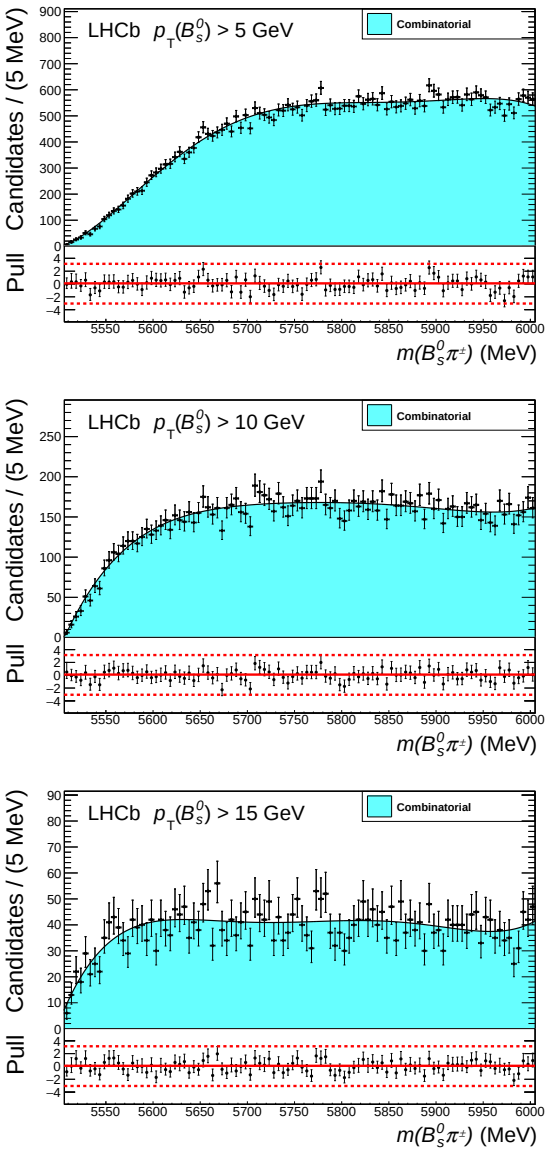

Figure 1: Results of the background-only fit to the $B_s^0\pi^\pm$ mass distribution for candidates (both B_s^0 modes combined) with minimum $p_{\rm T}(B_s^0)$ of (top) 5 GeV, (middle) 10 GeV and (bottom) 15 GeV. The distributions of the normalised residuals, or "pulls", displayed underneath the main figures show good agreement between the fit functions and the data.

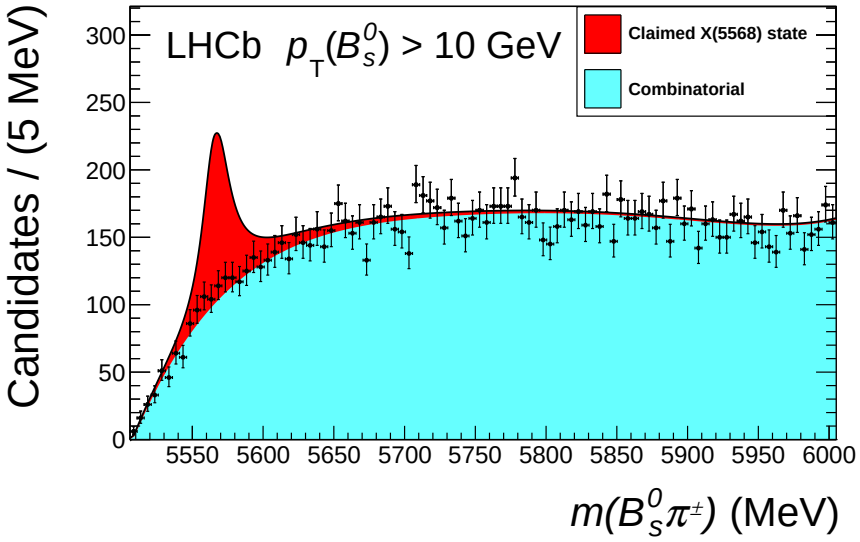

Figure 2: The $B_s^0\pi^\pm$ invariant mass distribution, for candidates with $p_{\rm T}(B_s^0) > 10\,{\rm GeV}$, with a signal component superimposed that corresponds to $\rho_X^{\rm LHCb} = 8.6\,\%$. The shape and yield of the combinatorial background component is obtained from the fit with the signal yield fixed to zero, shown in Fig. 1.

References

[1] D0 collaboration, V. M. Abazov *et al.*, *Evidence for a $B_s^0\pi^\pm$ state*, Phys. Rev. Lett. **117** (2016) 022003, arXiv:1602.07588.