

# Supplementary material for LHCb-PAPER-2017-005

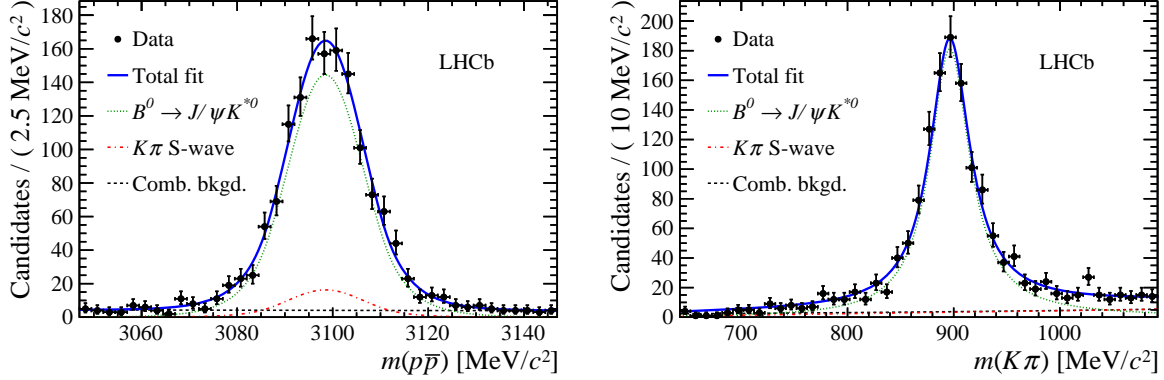


Figure 1: Invariant mass distribution of  $B^0 \rightarrow J/\psi K^*(892)^0$  in the (left)  $p\bar{p}$  and (right)  $K\pi$  final state. The result of the fits is displayed with blue solid lines, the signal with a green dotted line, the  $K\pi$  S-wave component with a red dot-dashed line and the combinatorial background with a black dashed line.

Table 1: Relative contributions in percent of the components of the uncertainties on the ratios of branching fractions.

	$\frac{\mathcal{B}(B^0 \rightarrow p\bar{p}KK)}{\mathcal{B}(B^0 \rightarrow p\bar{p}K\pi)}$	$\frac{\mathcal{B}(B^0 \rightarrow p\bar{p}\pi\pi)}{\mathcal{B}(B^0 \rightarrow p\bar{p}K\pi)}$	$\frac{\mathcal{B}(B_s^0 \rightarrow p\bar{p}K\pi)}{\mathcal{B}(B^0 \rightarrow p\bar{p}K\pi)}$	$\frac{\mathcal{B}(B_s^0 \rightarrow p\bar{p}K\pi)}{\mathcal{B}(B_s^0 \rightarrow p\bar{p}KK)}$
MC statistics	3.1	2.3	4.8	4.8
Efficiency of hardware trigger	3.7	3.7	3.7	3.7
Tracking efficiency	1.1	1.1	1.1	1.1
Calibration of particle identification	1.7	1.2	1.6	1.8
Effect of $B_s$ lifetime	-	-	2.5	0.1
Effect of charm vetoes	0.5	0.1	0.4	0.5
Shape fit components	-	-	-	-
Additional fit components	8.2	0.8	4.0	4.2
Normalisation of reflections in fit	0.2	0.1	0.7	0.8
$f_d/f_s$	-	-	5.8	-
Total systematic uncertainty	-	-	-	-
Statistical uncertainty	24.8	4.5	16.3	17.0

Table 2: Relative contributions in percent of the components of the uncertainties on the  $B_{(s)}^0 \rightarrow p\bar{p}h' h'$  branching fractions.

	$B^0 \rightarrow p\bar{p}KK$	$B^0 \rightarrow p\bar{p}K\pi$	$B^0 \rightarrow p\bar{p}K\pi$	$B_s^0 \rightarrow p\bar{p}K\pi$	$B_s^0 \rightarrow p\bar{p}KK$	$B_s^0 \rightarrow p\bar{p}K\pi$	$B_s^0 \rightarrow p\bar{p}K\pi$
MC statistics	3.0	1.7	2.1	1.9	4.7	4.1	4.1
Efficiency of hardware trigger	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Tracking efficiency	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Calibration of particle identification	1.9	1.7	1.4	2.0	1.7	1.4	1.4
Effect of $B_s$ lifetime	-	-	-	2.6	2.5	2.7	2.7
Effect of charm vetoes	0.5	0.1	0.1	0.4	0.4	0.2	0.2
Shape fit components	1.8	0.3	0.5	0.4	0.5	1.9	1.9
Additional fit components	8.4	2.3	2.3	2.5	4.6	7.3	7.3
Normalisation of reflections in fit	0.2	0.0	0.1	0.4	0.7	1.7	1.7
Branching fraction of normalisation mode	6.9	6.9	6.9	6.9	6.9	6.9	6.9
$f_d/f_s$	-	-	-	5.8	5.8	5.8	5.8
Total systematic uncertainty	10.1	5.1	5.2	6.0	8.2	10.0	10.0
Statistical uncertainty	25.0	4.2	5.4	6.2	16.4	41.3	41.3