

# Supplementary material for LHCb-PAPER-2017-022

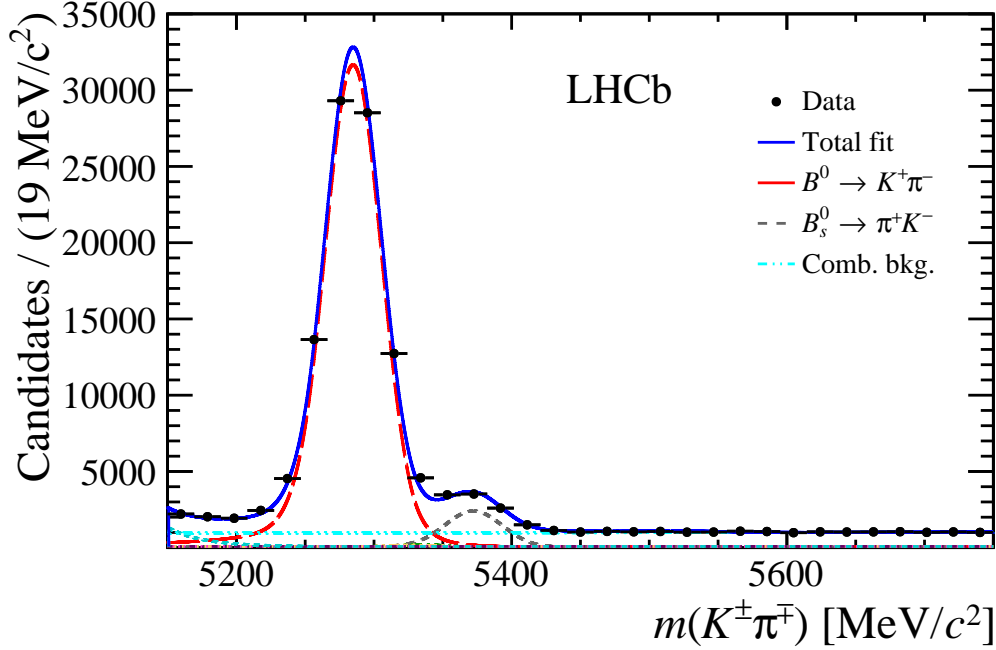


Figure 1: Invariant mass distribution of  $K^\pm\pi^\mp$  candidates, with a linear scale. The fit result (blue, solid line) is shown together with the data. The description of all fit components, which are largely invisible, matches the description provided in Fig. 2 of the paper.

Table 1: Summary of systematic uncertainties relative to the measured  $B^0 \rightarrow K^+\pi^-$  branching fraction. Each total corresponds to the quadratic sum of each column.

Uncertainty origin	Value (%)	
	$B^0 \rightarrow p\bar{p}$	$B_s^0 \rightarrow p\bar{p}$
Trigger	3.1	3.1
Tracking	6.1	6.1
Selection	8.6	8.3
Particle identification	4.7	4.6
Mass fits	7.3	208
$B^0 \rightarrow K^+\pi^-$ branching fraction	2.6	2.6
$f_s/f_d$	–	5.8
Total systematic uncertainty	14.2	209
Statistical uncertainty	21.6	34.1

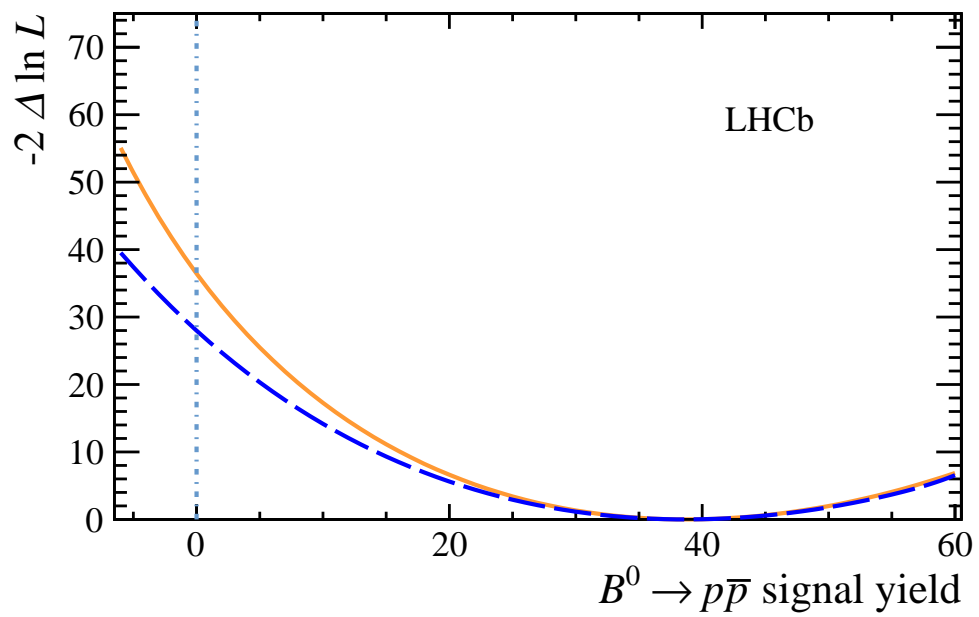


Figure 2: The profile likelihood as a function of the  $B^0 \rightarrow p\bar{p}$  signal yield. The orange solid curve corresponds to the statistical-only profile whereas the blue dashed curve includes systematic uncertainties. The signal significance is 5.3 (6.0) standard deviations including (excluding) systematic effects.