

# Supplementary material for LHCb-PAPER-2016-055

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

Thus far, the  $B_c^+$  mass has been measured by the LHCb experiment using four independent final states:  $J/\psi \pi^+$  [?],  $J/\psi D_s^+$  [?],  $J/\psi p\bar{p}\pi^+$  [?] and  $J/\psi D^0 K^+$ . The results and their average are summarised in Fig. ???. The uncertainties for each of the measurements are listed in Table ???. The statistical uncertainty and the systematic uncertainties due to the choice of the fit model, final-state radiation and masses of decay products are uncorrelated, while other systematic uncertainties are considered to be fully correlated when calculating the average.

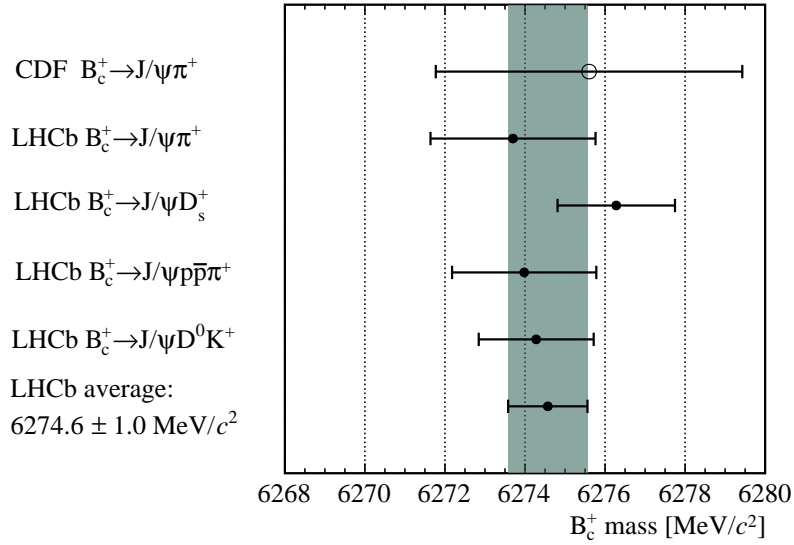


Figure 1: The  $B_c^+$  mass results obtained by the LHCb experiment with the  $B_c^+ \rightarrow J/\psi \pi^+$ ,  $B_c^+ \rightarrow J/\psi D_s^+$ ,  $B_c^+ \rightarrow J/\psi p\bar{p}\pi^+$  and  $B_c^+ \rightarrow J/\psi D^0 K^+$  decays, and their weighted average, together with the latest CDF result [?] in the  $B_c^+ \rightarrow J/\psi \pi^+$  decay.

Table 1: Results of LHCb measurements of the  $B_c^+$  mass (in  $\text{MeV}/c^2$ ).

Decay	$J/\psi \pi^+$	$J/\psi D_s^+$	$J/\psi p\bar{p}\pi^+$	$J/\psi D^0 K^+$
Yields	$162 \pm 18$	$28.9 \pm 5.6$	$23.9 \pm 5.3$	$14 \pm 4$
Central value	6273.7	6276.28	6273.98	6274.28
Statistical uncertainty	1.3	1.44	1.75	1.40
Systematic uncertainties				
Momentum scale	1.4	0.30	0.40	0.26
Fit model	0.3	0.055	0.14	0.18
Final-state radiation	0.1	—	0.03	0.01
Energy loss correction	0.1	0.05	0.05	0.05
Decay product mass	—	0.16	—	0.05
$\eta$ dependence	0.3	—	—	—
Alignment	0.6	—	—	—