

BOTTOM, CHARMED MESONS ($B = C = \pm 1$)

$$B_c^+ = c\bar{b}, B_c^- = \bar{c}b, \quad \text{similarly for } B_c^{*0}\text{'s}$$

B_c^+

$$I(J^P) = 0(0^-)$$

I, J, P need confirmation.

Quantum numbers shown are quark-model predictions.

$$\text{Mass } m = 6274.47 \pm 0.32 \text{ MeV}$$

$$m_{B_c^+} - m_{B_s^0} = 907.8 \pm 0.5 \text{ MeV}$$

$$\text{Mean life } \tau = (0.510 \pm 0.009) \times 10^{-12} \text{ s}$$

B_c^- modes are charge conjugates of the modes below.

B_c^+ DECAY MODES $\times B(\bar{b} \rightarrow B_c)$	Fraction (Γ_i/Γ)	Confidence level	P (MeV/c)
$J/\psi(1S) \ell^+ \nu_\ell$ anything	seen		—
$J/\psi(1S) \mu^+ \nu_\mu$	seen		2372
$J/\psi(1S) \tau^+ \nu_\tau$	seen		1932
$J/\psi(1S) \pi^+$	seen		2370
$J/\psi(1S) K^+$	seen		2341
$J/\psi(1S) \pi^+ \pi^+ \pi^-$	seen		2350
$J/\psi(1S) a_1(1260)$	not seen		2169
$J/\psi(1S) K^+ K^- \pi^+$	seen		2203
$J/\psi(1S) \pi^+ \pi^+ \pi^+ \pi^- \pi^-$	seen		2309
$\psi(2S) \pi^+$	seen		2051
$J/\psi(1S) D^0 K^+$	seen		1539
$J/\psi(1S) D^*(2007)^0 K^+$	seen		1411
$J/\psi(1S) D^*(2010)^+ K^{*0}$	seen		919
$J/\psi(1S) D^+ K^{*0}$	seen		1122
$J/\psi(1S) D_s^+$	seen		1821
$J/\psi(1S) D_s^{*+}$	seen		1727
$J/\psi(1S) p \bar{p} \pi^+$	seen		1791
$\chi_c^0 \pi^+$	$(2.4^{+0.9}_{-0.8}) \times 10^{-5}$		2205
$p \bar{p} \pi^+$	not seen		2970
$D^0 K^+$	seen		2837
$D^0 \pi^+$	not seen		2858
$D^{*0} \pi^+$	not seen		2814
$D^{*0} K^+$	not seen		2792

$D_s^+ \bar{D}^0$	< 7.2	$\times 10^{-4}$	90%	2483
$D_s^+ D^0$	< 3.0	$\times 10^{-4}$	90%	2483
$D^+ \bar{D}^0$	< 1.9	$\times 10^{-4}$	90%	2521
$D^+ D^0$	< 1.4	$\times 10^{-4}$	90%	2521
$D_s^{*+} \bar{D}^0$	< 5.3	$\times 10^{-4}$	90%	2425
$D_s^+ \bar{D}^*(2007)^0$	< 4.6	$\times 10^{-4}$	90%	2427
$D_s^{*+} D^0$	< 9	$\times 10^{-4}$	90%	2425
$D_s^+ D^*(2007)^0$	< 6.6	$\times 10^{-4}$	90%	2427
$D^*(2010)^+ \bar{D}^0$	< 3.8	$\times 10^{-4}$	90%	2467
$D^*(2010)^+ \bar{D}^0, D^{*+} \rightarrow D^+ \pi^0 / \gamma$	not seen			—
$D^+ \bar{D}^*(2007)^0$	< 6.5	$\times 10^{-4}$	90%	2466
$D^*(2007)^+ D^0$	< 2.0	$\times 10^{-4}$	90%	—
$D^*(2010)^+ D^0, D^{*+} \rightarrow D^+ \pi^0 / \gamma$	not seen			2467
$D^+ D^*(2007)^0$	< 3.7	$\times 10^{-4}$	90%	2466
$D_s^{*+} \bar{D}^*(2007)^0$	< 1.3	$\times 10^{-3}$	90%	2366
$D_s^{*+} D^*(2007)^0$	< 1.3	$\times 10^{-3}$	90%	2366
$D^*(2010)^+ \bar{D}^*(2007)^0$	< 1.0	$\times 10^{-3}$	90%	2410
$D^*(2010)^+ D^*(2007)^0$	< 7.7	$\times 10^{-4}$	90%	2410
$D^+ K^{*0}$	not seen			2783
$D^+ \bar{K}^{*0}$	not seen			2783
$D_s^+ K^{*0}$	not seen			2751
$D_s^+ \bar{K}^{*0}$	not seen			2751
$D_s^+ \phi$	not seen			2727
$K^+ K^0$	not seen			3098
$B_s^0 \pi^+ / B(\bar{b} \rightarrow B_s)$	seen			—

 $B_c(2S)^\pm$
 $I(J^P) = 0(0^-)$

 Mass $m = 6871.2 \pm 1.0$ MeV

$B_c(2S)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$B_c^+ \pi^+ \pi^-$	seen	504