

BOTTOM, CHARMED MESONS

($B = C = \pm 1$)

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

B_c^+

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

I, J, P need confirmation.

Quantum numbers shown are quark-model predictions.

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

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

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

The following quantities are not pure branching ratios; rather the fractions $\Gamma_i/\Gamma \times B(\bar{b} \rightarrow B_c)$. B_c^- modes are charge conjugates of the modes below.

NODE=MXXX049

NODE=S091

NODE=S091M;DTYPE=M

NODE=S091A01;DTYPE=D

NODE=S091T;DTYPE=T;OUR EVAL;
→ UNCHECKED ←

NODE=S091215;NODE=S091

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
$J/\psi(1S)D^0K^+$	seen		1539
$J/\psi(1S)D^{*0}(2007)K^+$	seen		1411
$J/\psi(1S)D^{*0}(2010)^+K^{*0}$	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
$p\bar{p}\pi^+$	not seen		2970
D^0K^+	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
$D_s^+\bar{D}^{*0}(2007)^0$	$<4.6 \times 10^{-4}$	90%	2427
$D_s^{*+}D^0$	$<9 \times 10^{-4}$	90%	2425
$D_s^+D^{*0}(2007)^0$	$<6.6 \times 10^{-4}$	90%	2427
$D^{*0}(2010)^+\bar{D}^0$	$<3.8 \times 10^{-4}$	90%	2467
$D^{*0}(2010)^+\bar{D}^0, D^{*+} \rightarrow D^+\pi^0/\gamma$	not seen		—
$D^+\bar{D}^{*0}(2007)^0$	$<6.5 \times 10^{-4}$	90%	2466
$D^{*0}(2007)^+D^0$	$<2.0 \times 10^{-4}$	90%	—
$D^{*0}(2010)^+D^0, D^{*+} \rightarrow D^+\pi^0/\gamma$	not seen		2467

CLUMP=A;DESIG=1;OUR EVAL;

→ UNCHECKED ←

DESIG=19;OUR EVAL;→ UNCHECKED ←

DESIG=32;OUR EVAL;→ UNCHECKED ←

DESIG=2;OUR EVAL;→ UNCHECKED ←

DESIG=14;OUR EVAL;→ UNCHECKED ←

DESIG=3;OUR EVAL;→ UNCHECKED ←

DESIG=4;OUR EVAL;→ UNCHECKED ←

DESIG=17;OUR EVAL;→ UNCHECKED ←

DESIG=18;OUR EVAL;→ UNCHECKED ←

DESIG=11;OUR EVAL;→ UNCHECKED ←

DESIG=22;OUR EVAL;→ UNCHECKED ←

DESIG=23;OUR EVAL;→ UNCHECKED ←

DESIG=24;OUR EVAL;→ UNCHECKED ←

DESIG=25;OUR EVAL;→ UNCHECKED ←

DESIG=12;OUR EVAL;→ UNCHECKED ←

DESIG=13;OUR EVAL;→ UNCHECKED ←

DESIG=20;OUR EVAL;→ UNCHECKED ←

DESIG=21;OUR EVAL;→ UNCHECKED ←

DESIG=27;OUR EVAL;→ UNCHECKED ←

DESIG=28;OUR EVAL;→ UNCHECKED ←

DESIG=29;OUR EVAL;→ UNCHECKED ←

DESIG=31;OUR EVAL;→ UNCHECKED ←

DESIG=33

DESIG=35

DESIG=36

DESIG=37

DESIG=38

DESIG=39

DESIG=40

DESIG=41

DESIG=5

DESIG=49;OUR EVAL;→ UNCHECKED ←

DESIG=42

DESIG=50

DESIG=43;OUR EVAL;→ UNCHECKED ←

$D^+ D^{*}(2007)^0$	$<3.7 \times 10^{-4}$	90%	2466	DESIG=44
$D_s^{*+} \overline{D}^{*}(2007)^0$	$<1.3 \times 10^{-3}$	90%	2366	DESIG=45
$D_s^{*+} D^{*}(2007)^0$	$<1.3 \times 10^{-3}$	90%	2366	DESIG=46
$D^{*}(2010)^+ \overline{D}^{*}(2007)^0$	$<1.0 \times 10^{-3}$	90%	2410	DESIG=47
$D^{*}(2010)^+ D^{*}(2007)^0$	$<7.7 \times 10^{-4}$	90%	2410	DESIG=48
$D^+ K^{*0}$	not seen		2783	DESIG=6;OUR EVAL;→ UNCHECKED ←
$D^+ \overline{K}^{*0}$	not seen		2783	DESIG=7;OUR EVAL;→ UNCHECKED ←
$D_s^+ K^{*0}$	not seen		2751	DESIG=8;OUR EVAL;→ UNCHECKED ←
$D_s^+ \overline{K}^{*0}$	not seen		2751	DESIG=9;OUR EVAL;→ UNCHECKED ←
$D_s^+ \phi$	not seen		2727	DESIG=10;OUR EVAL;→ UNCHECKED ←
$K^+ K^0$	not seen		3098	DESIG=15;OUR EVAL;→ UNCHECKED ←
$B_s^0 \pi^+ / B(\overline{b} \rightarrow B_s)$	seen		—	DESIG=16;OUR EVAL;→ UNCHECKED ←

$B_c(2S)^{\pm}$

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

Mass $m = 6871.2 \pm 1.0$ MeV

The following quantities are not pure branching ratios; rather the fractions $\Gamma_i/\Gamma \times B(\overline{b} \rightarrow B_c(2S))$.

NODE=M217
NODE=M217M;DTYPE=M
NODE=M217215;NODE=M217

$B_c(2S)^{\pm}$ DECAY MODES $\times B(\overline{b} \rightarrow B_c(2S))$	Fraction (Γ_i/Γ)	p (MeV/c)
$B_c^+ \pi^+ \pi^-$	seen	504

DESIG=1