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

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

## $B_c^+$

$I(J^P) = 0(0^-)$
$I$, $J$, $P$ need confirmation.

Quantum numbers shown are quark-model predicitions.

Mass $m = 6275.1 \pm 1.0$ MeV
Mean life $\tau = (0.507 \pm 0.009) \times 10^{-12}$ s

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

| $B_c^+$ DECAY MODES × B($\overline{b} \to$ $B_c$) | Fraction ($\Gamma_i/\Gamma$) | Confidence level | $p$ (MeV/$c$) |
|---|---|---|---|
| The following quantities are not pure branching ratios; rather the fraction $\Gamma_i/\Gamma \times$ B($\overline{b} \to$ $B_c$). | | | |
| $J/\psi(1S)\ell^+\nu_\ell$ anything | $(5.2\ ^{+2.4}_{-2.1}) \times 10^{-5}$ | | – |
| $J/\psi(1S)\pi^+$ | seen | | 2371 |
| $J/\psi(1S)K^+$ | seen | | 2341 |
| $J/\psi(1S)\pi^+\pi^+\pi^-$ | seen | | 2350 |
| $J/\psi(1S)a_1(1260)$ | $< 1.2 \times 10^{-3}$ | 90% | 2169 |
| $J/\psi(1S)K^+K^-\pi^+$ | seen | | 2203 |
| $J/\psi(1S)\pi^+\pi^+\pi^+\pi^-\pi^-$ | seen | | 2309 |
| $\psi(2S)\pi^+$ | seen | | 2052 |
| $J/\psi(1S)D_s^+$ | seen | | 1822 |
| $J/\psi(1S)D_s^{*+}$ | seen | | 1728 |
| $J/\psi(1S)p\overline{p}\pi^+$ | seen | | 1792 |
| $D^*(2010)^+\overline{D}^0$ | $< 6.2 \times 10^{-3}$ | 90% | 2467 |
| $D^+K^{*0}$ | $< 0.20 \times 10^{-6}$ | 90% | 2783 |
| $D^+\overline{K}^{*0}$ | $< 0.16 \times 10^{-6}$ | 90% | 2783 |
| $D_s^+K^{*0}$ | $< 0.28 \times 10^{-6}$ | 90% | 2751 |
| $D_s^+\overline{K}^{*0}$ | $< 0.4 \times 10^{-6}$ | 90% | 2751 |
| $D_s^+\phi$ | $< 0.32 \times 10^{-6}$ | 90% | 2727 |
| $K^+K^0$ | $< 4.6 \times 10^{-7}$ | 90% | 3098 |
| $B_s^0\pi^+$ / B($\overline{b} \to$ $B_s$) | $(2.37^{+0.37}_{-0.35}) \times 10^{-3}$ | | – |