$B_c^{\pm}$

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

OMITTED FROM SUMMARY TABLE

I, J, P need confirmation. Quantum numbers shown are quark-model predictions.

B_c^+ DECAY MODES

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

	Mode
Γ_1	$J/\psi(1S)\ell^+\nu_\ell$ anything
Γ_2	$J/\psi(1S)\pi^+$
Γ_3	$J/\psi(1S)\pi^+\pi^+\pi^-$

B_c^+ BRANCHING RATIOS

$\Gamma(J/\psi(1S)\ell^+\nu_\ell \text{anything})/\Gamma_{\text{total}} \times \text{B}(\overline{b} \to B_c)$ — $\Gamma_1/\Gamma \times \text{B}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.2 \times 10^{-4}$	90	[1] BARATE	97H	ALEP	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.9 \times 10^{-4}$	90	[2] ABREU	97E	DLPH	$e^+e^- \to Z$

[1] BARATE 97H reports $\text{B}(Z \to B_c X)/\text{B}(Z \to q q)\cdot\text{B}(B_c \to J/\psi(1S)\ell\nu_\ell) < 5.2\times10^{-5}$ at 90%CL. We rescale to our PDG 96 values of $\text{B}(Z \to b\overline{b})$. A $B_c^+ \to J/\psi(1S)\mu^+\nu_\mu$ candidate event is found, compared to all the known background sources 2×10^{-3}, which gives $m_{B_c} = 5.96^{+0.25}_{-0.19}$ GeV and $\tau_{B_c} = 1.77 \pm 0.17$ ps.

[2] ABREU 97E value listed is for an assumed $\tau_{B_c} = 0.4$ ps and improves to 1.6×10^{-4} for $\tau_{B_c} = 1.4$ ps.

$\Gamma(J/\psi(1S)\pi^+)/\Gamma_{\text{total}} \times \text{B}(\overline{b} \to B_c)$ — $\Gamma_2/\Gamma \times \text{B}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<8.2 \times 10^{-5}$	90	[3] BARATE	97H	ALEP	$e^+e^- \to Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<3.4 \times 10^{-4}$	90	[4] ABREU	97E	DLPH	$e^+e^- \to Z$
$<2.0 \times 10^{-5}$	95	[5] ABE	96R	CDF	$p\overline{p}$ 1.8 TeV

[3] BARATE 97H reports $\text{B}(Z \to B_c X)/\text{B}(Z \to q q)\cdot\text{B}(B_c \to J/\psi(1S)\pi) < 3.6 \times 10^{-5}$ at 90%CL. We rescale to our PDG 96 values of $\text{B}(Z \to b\overline{b})$.

[4] ABREU 97E value listed is for an assumed $\tau_{B_c} = 0.4$ ps and improves to 2.7×10^{-4} for $\tau_{B_c} = 1.4$ ps.

[5] ABE 96R reports $\text{B}(b \to B_c X)/\text{B}(b \to B^+ X)\cdot\text{B}(B_c^+ \to J/\psi(1S)\pi^+)/\text{B}(B^+ \to J/\psi(1S)K^+) < 0.053$ at 95%CL for $\tau_{B_c} = 0.8$ ps. It changes from 0.15 to 0.04 for 0.17 ps$< \tau_{B_c} < 1.6$ ps. We rescale to our PDG 96 values of $\text{B}(b \to B^+) = 0.378 \pm 0.022$ and $\text{B}(B^+ \to J/\psi(1S)K^+) = 0.00101 \pm 0.00014$.

$\Gamma(J/\psi(1S)\pi^+\pi^+\pi^-)/\Gamma_{total} \times B(\overline{b} \rightarrow B_c)$ **$\Gamma_3/\Gamma \times B$**

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.7 \times 10^{-4}$	90	[6] ABREU	97E	DLPH	$e^+e^- \rightarrow Z$

[6] ABREU 97E value listed is independent of 0.4 ps$< \tau_{B_c} <$ 1.4 ps.

$B_c^{\pm}$ REFERENCES

ABREU	97E	PL B398 207	P. Abreu+	(DELPHI Collab.)
BARATE	97H	PL B402 213	R. Barate+	(ALEPH Collab.)
ABE	96R	PRL 77 5176	+Akimoto, Akopian, Albrow+	(CDF Collab.)
PDG	96	PR D54 1		