

X(3823)

$$I^G(J^{PC}) = ?^?(?^?-)$$

OMITTED FROM SUMMARY TABLE

Seen by BHARDWAJ 13 in $B \rightarrow \chi_{c1} \gamma K$ decays as a narrow peak in the invariant mass distribution of the $\chi_{c1} \gamma$ system. Properties consistent with the $\psi_2(1^3D_2) c\bar{c}$ state.

X(3823) MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
3823.1±1.8±0.7	33 ± 10	¹ BHARDWAJ 13	BELL	$B \rightarrow \chi_{c1} \gamma K$

¹ From a simultaneous fit to $B^\pm \rightarrow (\chi_{c1} \gamma) K^\pm$ and $B^0 \rightarrow (\chi_{c1} \gamma) K_S^0$ with significance 4.0σ including systematics. Corrected for the measured $\psi(2S)$ mass using $B \rightarrow \psi(2S) K \rightarrow (\gamma \chi_{c1}) K$ decays.

X(3823) WIDTH

VALUE (MeV)	CL%	DOCUMENT ID	TECN	COMMENT
<24	90	¹ BHARDWAJ 13	BELL	$B \rightarrow \chi_{c1} \gamma K$

¹ From a simultaneous fit to $B^\pm \rightarrow (\chi_{c1} \gamma) K^\pm$ and $B^0 \rightarrow (\chi_{c1} \gamma) K_S^0$ with significance 4.0σ including systematics.

X(3823) DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \chi_{c1} \gamma$	seen
$\Gamma_2 \quad \chi_{c2} \gamma$	not seen

X(3823) BRANCHING RATIOS

$\Gamma(\chi_{c1} \gamma)/\Gamma_{total}$ **Γ_1/Γ**

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
seen	33 ± 10	¹ BHARDWAJ 13	BELL	$B^+ \rightarrow \chi_{c1} \gamma K^+$

¹ Reported $B(B^\pm \rightarrow X(3823) K^\pm) \times B(X(3823) \rightarrow \gamma \chi_{c1}) = (9.7 \pm 2.8 \pm 1.1) \times 10^{-6}$ with statistical significance 3.8σ .

$\Gamma(\chi_{c2} \gamma)/\Gamma_{total}$ **Γ_2/Γ**

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	¹ BHARDWAJ 13	BELL	$B^+ \rightarrow \chi_{c2} \gamma K^+$

¹ Reported $B(B^\pm \rightarrow X(3823) K^\pm) \times B(X(3823) \rightarrow \gamma \chi_{c2}) < 3.6 \times 10^{-6}$ at 90% CL.

$\Gamma(\chi_{c2} \gamma)/\Gamma(\chi_{c1} \gamma)$ **Γ_2/Γ_1**

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.41	90	BHARDWAJ 13	BELL	$B^+ \rightarrow \chi_{c1/c2} \gamma K^+$

X(3823) REFERENCES

BHARDWAJ 13 PRL 111 032001 V. Bhardwaj *et al.* (BELLE Collab.)
