$X(3945)$

$$I^G(J^{PC}) = 0^+(?^{?+})$$

OMITTED FROM SUMMARY TABLE
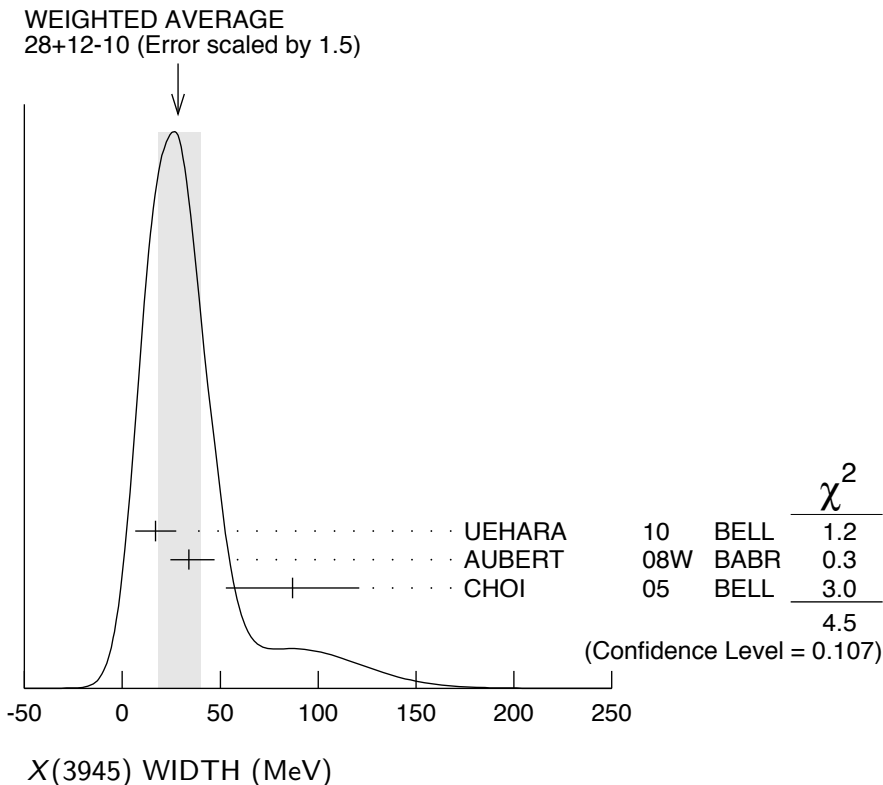
Observed in $\omega J/\psi$, thus $C = +$. May be the same state as $\chi_{c2}(2P)$.

$X(3945)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
3915.5± 2.7 OUR AVERAGE					
$3915 \pm 3 \pm 2$	49 ± 15	[1] UEHARA	10	BELL	$10.6\ e^+e^- \to e^+e^-\omega J/\psi$
$3914.6^{+3.8}_{-3.4} \pm 2.0$		[2] AUBERT	08W	BABR	$B \to \omega J/\psi K$
$3943 \pm 11 \pm 13$	58 ± 11	[2] CHOI	05	BELL	$B \to \omega J/\psi K$

[1] May be $\chi_{c2}(2P)$.

[2] $\omega J/\psi$ threshold enhancement fitted as an S-wave Breit-Wigner resonance.

$X(3945)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
28^{+12}_{-10} OUR AVERAGE	Error includes scale factor of 1.5. See the ideogram below.				
$17 \pm 10 \pm 3$	49 ± 15	[3] UEHARA	10	BELL	$10.6\ e^+e^- \to e^+e^-\omega J/\psi$
$34^{+12}_{-8} \pm 5$		[4] AUBERT	08W	BABR	$B \to \omega J/\psi K$
$87 \pm 22 \pm 26$	58 ± 11	[4] CHOI	05	BELL	$B \to \omega J/\psi K$

[3] May be $\chi_{c2}(2P)$.

[4] $\omega J/\psi$ threshold enhancement fitted as an S-wave Breit-Wigner resonance.

WEIGHTED AVERAGE
28+12-10 (Error scaled by 1.5)

				χ^2
UEHARA	10	BELL	1.2
AUBERT	08W	BABR	0.3
CHOI	05	BELL	3.0
			4.5

(Confidence Level = 0.107)

$X(3945)$ WIDTH (MeV)

$X(3945)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\omega J/\psi$	seen
Γ_2	$\overline{D}^{*0} D^0$	
Γ_3	$\gamma\gamma$	seen

$X(3945)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\omega J/\psi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\qquad$ $\Gamma_1\Gamma_3/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
18± 5±2	49 ± 15	[5,6] UEHARA	10	BELL	10.6 $e^+e^- \to e^+e^- \omega J/\psi$

• • • We do not use the following data for averages, fits, limits, etc. • • •

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
61±17±8	49 ± 15	[5,7] UEHARA	10	BELL	10.6 $e^+e^- \to e^+e^- \omega J/\psi$

[5] May be $\chi_{c2}(2P)$.
[6] For $J^P = 2^+$, helicity-2.
[7] For $J^P = 0^+$.

$X(3945)$ BRANCHING RATIOS

$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\qquad$ Γ_3/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
seen	[8] UEHARA	10	BELL	10.6 $e^+e^- \to e^+e^- \omega J/\psi$

[8] May be $\chi_{c2}(2P)$.

$\Gamma(\omega J/\psi)/\Gamma(\overline{D}^{*0} D^0)$ Γ_1/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
>0.71	90	[9] AUSHEV	10	BELL	$B \to \overline{D}^{*0} D^0 K$

[9] By combining the upper limit $B(B \to X(3945)K) \times B(X(3945) \to D^{*0}\overline{D}^0) < 0.67 \times 10^{-4}$ from AUSHEV 10 with the average of CHOI 05 and AUBERT 08W measurements $B(B \to X(3945)K) \times B(X(3945) \to \omega J/\psi) = (0.51 \pm 0.11) \times 10^{-4}$.

X(3945) REFERENCES

AUSHEV	10	PR D81 031103	T. Aushev *et al.*	(BELLE Collab.)
UEHARA	10	PRL 104 092001	S. Uehara *et al.*	(BELLE Collab.)
AUBERT	08W	PRL 101 082001	B. Aubert *et al.*	(BABAR Collab.)
CHOI	05	PRL 94 182002	S.-K. Choi *et al.*	(BELLE Collab.)