$\psi(4260)$

$I^G(J^{PC}) = 0^-(1^{--})$

also known as $Y(4260)$; was $X(4260)$
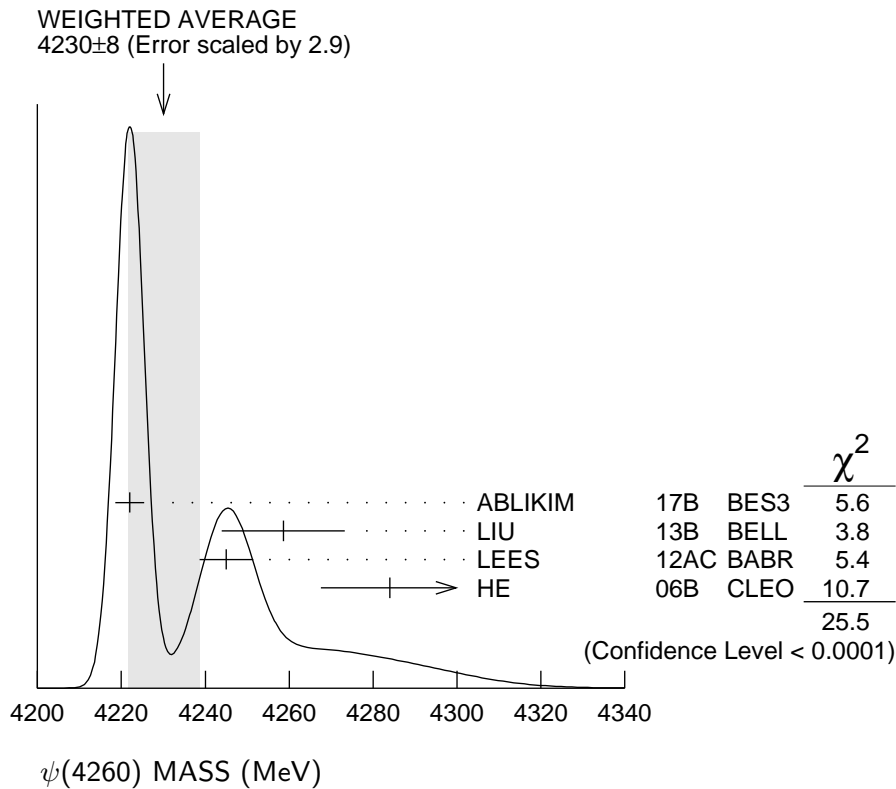
This state shows properties different from a conventional $q\overline{q}$ state. A candidate for an exotic structure. See the review on non-$q\overline{q}$ states.

Seen in radiative return from e^+e^- collisions at $\sqrt{s} = 9.54$–10.58 GeV by AUBERT,B 05I, HE 06B, and YUAN 07, and in e^+e^- collisions at $\sqrt{s} \approx 4.26$ GeV by COAN 06. Possibly seen by AUBERT 06 in $B^- \rightarrow K^-\pi^+\pi^- J/\psi$. See also the review on "Spectroscopy of mesons containing two heavy quarks."

$\psi(4260)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
4230 ± 8 OUR AVERAGE					Error includes scale factor of 2.9. See the ideogram below.
$4222.0\pm 3.1\pm 1.4$		[1] ABLIKIM	17B	BES3	$e^+e^- \rightarrow \pi^+\pi^- J/\psi$
$4258.6\pm 8.3\pm 12.1$		[2] LIU	13B	BELL	$e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
$4245 \pm 5 \pm 4$		[3] LEES	12AC	BABR	$10.58\ e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
$4284\ ^{+17}_{-16} \pm 4$	13.6	HE	06B	CLEO	9.4–$10.6\ e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

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

$4209.1\pm 6.8\pm 7.0$		[4] ZHANG	17B	RVUE	$e^+e^- \rightarrow \pi^+\pi^-\psi(2S)$
$4223.3\pm 1.6\pm 2.5$		[5] ZHANG	17C	RVUE	$e^+e^- \rightarrow \pi^+\pi^- J/\psi$ or $\psi(2S)$
$4247\ \pm 12\ ^{+17}_{-32}$		[2,6] YUAN	07	BELL	$10.58\ e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
$4259\ \pm 8\ ^{+2}_{-6}$	125	[7] AUBERT,B	05I	BABR	$10.58\ e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

[1] From a three-resonance fit.
[2] From a two-resonance fit.
[3] From a single-resonance fit. Supersedes AUBERT,B 05I.
[4] From a three-resonance fit.
[5] From a combined fit of BELLE, BABAR and BES3 $e^+e^- \rightarrow \pi^+\pi^- J/\psi$ and $e^+e^- \rightarrow \pi^+\pi^-\psi(2S)$ data.
[6] Superseded by LIU 13B.
[7] From a single-resonance fit. Two interfering resonances are not excluded. Superseded by LEES 12AC.

WEIGHTED AVERAGE
4230±8 (Error scaled by 2.9)

			χ^2
ABLIKIM	17B	BES3	5.6
LIU	13B	BELL	3.8
LEES	12AC	BABR	5.4
HE	06B	CLEO	10.7
			25.5

(Confidence Level < 0.0001)

$\psi(4260)$ MASS (MeV)

$\psi(4260)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
55 ±19 OUR AVERAGE					Error includes scale factor of 4.4. See the ideogram below.
44.1± 4.3± 2.0		[1] ABLIKIM	17B	BES3	$e^+e^- \to \pi^+\pi^- J/\psi$
134.1±16.4± 5.5		[2] LIU	13B	BELL	$e^+e^- \to \gamma\pi^+\pi^- J/\psi$
114 $^{+16}_{-15}$ ± 7		[3] LEES	12AC	BABR	10.58 $e^+e^- \to \gamma\pi^+\pi^- J/\psi$
73 $^{+39}_{-25}$ ± 5	13.6	HE	06B	CLEO	9.4–10.6 $e^+e^- \to \gamma\pi^+\pi^- J/\psi$

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

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
76.6±14.2± 2.4		[4] ZHANG	17B	RVUE	$e^+e^- \to \pi^+\pi^- \psi(2S)$
54.2± 2.6± 1.0		[5] ZHANG	17C	RVUE	$e^+e^- \to \pi^+\pi^- J/\psi$ or $\psi(2S)$
108 ±19 ±10		[2,6] YUAN	07	BELL	10.58 $e^+e^- \to \gamma\pi^+\pi^- J/\psi$
88 ±23 $^{+\ 6}_{-\ 4}$	125	[7] AUBERT,B	05I	BABR	10.58 $e^+e^- \to \gamma\pi^+\pi^- J/\psi$

[1] From a three-resonance fit.
[2] From a two-resonance fit.
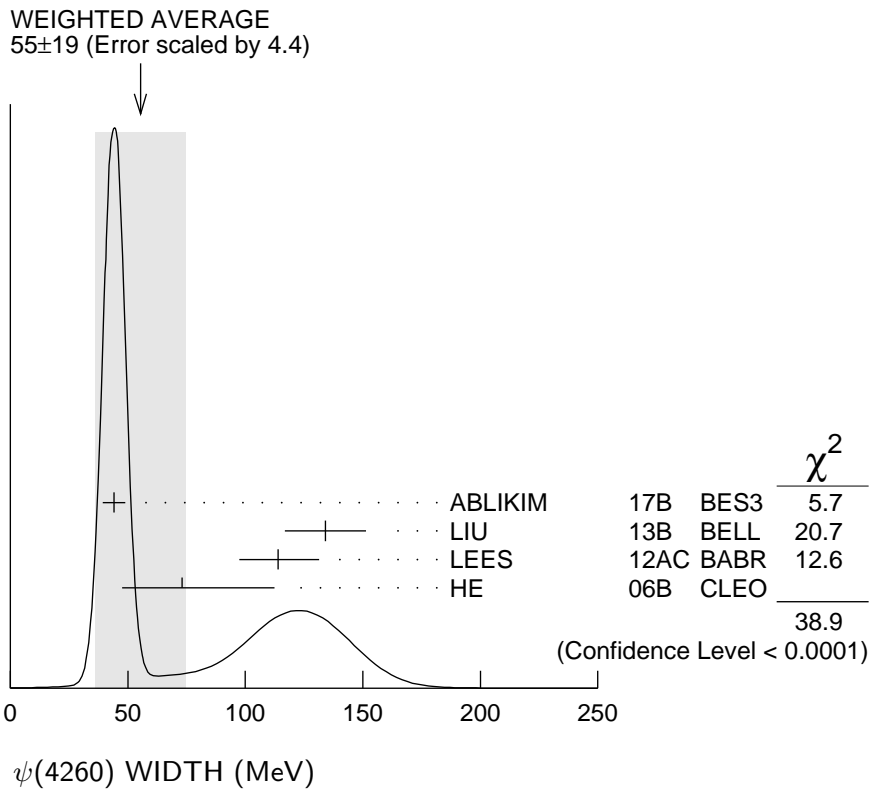[3] From a single-resonance fit. Supersedes AUBERT,B 05I.
[4] From a three-resonance fit.
[5] From a combined fit of BELLE, BABAR and BES3 $e^+e^- \to \pi^+\pi^- J/\psi$ and $e^+e^- \to \pi^+\pi^- \psi(2S)$ data.
[6] Superseded by LIU 13B.
[7] From a single-resonance fit. Two interfering resonances are not excluded. Superseded by LEES 12AC.

WEIGHTED AVERAGE
55±19 (Error scaled by 4.4)

			χ^2
ABLIKIM	17B	BES3	5.7
LIU	13B	BELL	20.7
LEES	12AC	BABR	12.6
HE	06B	CLEO	
			38.9

(Confidence Level < 0.0001)

0   50   100   150   200   250

$\psi(4260)$ WIDTH (MeV)

ψ(4260) DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$e^+ e^-$	
Γ_2	$J/\psi \pi^+ \pi^-$	seen
Γ_3	$J/\psi f_0(980),\ f_0(980) \to \pi^+ \pi^-$	seen
Γ_4	$Z_c(3900)^\pm \pi^\mp,\ Z_c^\pm \to J/\psi \pi^\pm$	seen
Γ_5	$J/\psi \pi^0 \pi^0$	seen
Γ_6	$J/\psi K^+ K^-$	seen
Γ_7	$J/\psi K_S^0 K_S^0$	not seen
Γ_8	$J/\psi \eta$	not seen
Γ_9	$J/\psi \pi^0$	not seen
Γ_{10}	$J/\psi \eta'$	not seen
Γ_{11}	$J/\psi \pi^+ \pi^- \pi^0$	not seen
Γ_{12}	$J/\psi \eta \pi^0$	not seen
Γ_{13}	$J/\psi \eta \eta$	not seen
Γ_{14}	$\psi(2S) \pi^+ \pi^-$	not seen
Γ_{15}	$\psi(2S) \eta$	not seen
Γ_{16}	$\chi_{c0} \omega$	not seen
Γ_{17}	$\chi_{c1} \pi^+ \pi^- \pi^0$	not seen
Γ_{18}	$\chi_{c2} \pi^+ \pi^- \pi^0$	not seen
Γ_{19}	$h_c(1P) \pi^+ \pi^-$	not seen

Γ_{20}	$\phi \pi^+ \pi^-$		not seen
Γ_{21}	$\phi f_0(980) \rightarrow \phi \pi^+ \pi^-$		not seen
Γ_{22}	$D\overline{D}$		not seen
Γ_{23}	$D^0 \overline{D}^0$		not seen
Γ_{24}	$D^+ D^-$		not seen
Γ_{25}	$D^* \overline{D}$+c.c.		not seen
Γ_{26}	$D^*(2007)^0 \overline{D}^0$+c.c.		not seen
Γ_{27}	$D^*(2010)^+ D^-$+c.c.		not seen
Γ_{28}	$D^* \overline{D}^*$		not seen
Γ_{29}	$D^*(2007)^0 \overline{D}^*(2007)^0$		not seen
Γ_{30}	$D^*(2010)^+ D^*(2010)^-$		not seen
Γ_{31}	$D\overline{D}\pi$+c.c.		
Γ_{32}	$D^0 D^- \pi^+$+c.c. (excl. $D^*(2007)^0 \overline{D}^{*0}$+c.c., $D^*(2010)^+ D^-$+c.c.)		not seen
Γ_{33}	$D\overline{D}^* \pi$+c.c. (excl. $D^* \overline{D}^*$)		not seen
Γ_{34}	$D^0 D^{*-} \pi^+$+c.c. (excl. $D^*(2010)^+ D^*(2010)^-$)		not seen
Γ_{35}	$D^0 D^*(2010)^- \pi^+$+c.c.		not seen
Γ_{36}	$D^* \overline{D}^* \pi$		not seen
Γ_{37}	$D_s^+ D_s^-$		not seen
Γ_{38}	$D_s^{*+} D_s^-$+c.c.		not seen
Γ_{39}	$D_s^{*+} D_s^{*-}$		not seen
Γ_{40}	$p\overline{p}$		not seen
Γ_{41}	$p\overline{p}\pi^0$		not seen
Γ_{42}	$K_S^0 K^\pm \pi^\mp$		not seen
Γ_{43}	$K_S^0 K^\pm \pi^\mp \pi^0$		
Γ_{44}	$K_S^0 K^\pm \pi^\mp \eta$		
Γ_{45}	$K^+ K^- \pi^0$		not seen

Radiative decays

Γ_{46}	$\eta_c(1S)\gamma$		possibly seen
Γ_{47}	$\chi_{c1}\gamma$		not seen
Γ_{48}	$\chi_{c2}\gamma$		not seen
Γ_{49}	$\chi_{c1}(3872)\gamma$		seen

$\psi(4260)\ \Gamma(i) \times \Gamma(e^+ e^-)/\Gamma(\text{total})$

$\Gamma(J/\psi \pi^+ \pi^-) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ $\qquad\qquad\qquad\qquad$ $\Gamma_2\Gamma_1/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
9.2±1.0 OUR AVERAGE					
$9.2\pm0.8\pm0.7$		[1] LEES		12AC BABR	10.58 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- J/\psi$
$8.9^{+3.9}_{-3.1}\pm1.8$	8.1	HE		06B CLEO	9.4–10.6 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- J/\psi$

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

$6.4 \pm 0.8 \pm 0.6$		[2] LIU	13B	BELL	$e^+ e^- \to \gamma \pi^+ \pi^- J/\psi$
$20.5 \pm 1.4 \pm 2.0$		[3] LIU	13B	BELL	$e^+ e^- \to \gamma \pi^+ \pi^- J/\psi$
$6.0 \pm 1.2 ^{+4.7}_{-0.5}$		[2,4] YUAN	07	BELL	$10.58\ e^+ e^- \to \gamma \pi^+ \pi^- J/\psi$
$20.6 \pm 2.3 ^{+9.1}_{-1.7}$		[3,4] YUAN	07	BELL	$10.58\ e^+ e^- \to \gamma \pi^+ \pi^- J/\psi$
$5.5 \pm 1.0 ^{+0.8}_{-0.7}$	125	[5] AUBERT,B	05I	BABR	$10.58\ e^+ e^- \to \gamma \pi^+ \pi^- J/\psi$

[1] From a single-resonance fit. Supersedes AUBERT,B 05I.
[2] Solution I of two equivalent solutions in a fit using two interfering resonances.
[3] Solution II of two equivalent solutions in a fit using two interfering resonances.
[4] Superseded by LIU 13B.
[5] From a single-resonance fit. Two interfering resonances are not excluded. Superseded by LEES 12AC.

$\Gamma(J/\psi K^+ K^-) \times \Gamma(e^+ e^-)/\Gamma_{total}$ $\Gamma_6 \Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<1.7	90	[1] SHEN	14	BELL	$9.4\text{–}10.9\ e^+ e^- \to$ $\gamma K^+ K^- J/\psi$

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

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<1.2	90	[2] YUAN	08	BELL	$e^+ e^- \to \gamma K^+ K^- J/\psi$

[1] From a fit of the broad $K^+ K^- J/\psi$ enhancement including a coherent $\psi(4260)$ amplitude with mass and width from LIU 13B. Supersedes YUAN 08.
[2] From a fit of the broad $K^+ K^- J/\psi$ enhancement including a coherent $\psi(4260)$ amplitude with mass and width from YUAN 07.

$\Gamma(J/\psi K^0_S K^0_S) \times \Gamma(e^+ e^-)/\Gamma_{total}$ $\Gamma_7 \Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.85	90	[1] SHEN	14	BELL	$9.4\text{–}10.9\ e^+ e^- \to \gamma K^0_S K^0_S J/\psi$

[1] From a fit of the $K^0_S K^0_S J/\psi$ mass range from 4.4 to 5.5 GeV including a coherent $\psi(4260)$ amplitude with mass and width from LIU 13B.

$\Gamma(J/\psi \eta) \times \Gamma(e^+ e^-)/\Gamma_{total}$ $\Gamma_8 \Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT

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

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<14.2	90	WANG	13B	BELL	$e^+ e^- \to J/\psi \eta \gamma$

$\Gamma(\psi(2S) \pi^+ \pi^-) \times \Gamma(e^+ e^-)/\Gamma_{total}$ $\Gamma_{14} \Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT

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

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<4.3	90	[1] LIU	08H	RVUE	$10.58\ e^+ e^- \to \psi(2S) \pi^+ \pi^- \gamma$
$7.4 ^{+2.1}_{-1.7}$		[2] LIU	08H	RVUE	$10.58\ e^+ e^- \to \psi(2S) \pi^+ \pi^- \gamma$

[1] For constructive interference with the $\psi(4360)$ in a combined fit of AUBERT 07S and WANG 07D data with three resonances.
[2] For destructive interference with the $\psi(4360)$ in a combined fit of AUBERT 07S and WANG 07D data with three resonances.

$\Gamma(\phi\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{20}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.4	90	AUBERT,BE	06D	BABR	10.6 $e^+e^- \to K^+K^-\pi^+\pi^-\gamma$

$\Gamma(\phi f_0(980) \to \phi\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{21}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.28	90	[1] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^+\pi^- K^+K^-\gamma$

[1] AUBERT 07AK reports $[\Gamma(\psi(4260) \to \phi f_0(980) \to \phi\pi^+\pi^-) \times \Gamma(\psi(4260) \to e^+e^-)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)] < 0.14$ eV which we divide by our best value $B(\phi(1020) \to K^+K^-) = 49.2 \times 10^{-2}$.

$\Gamma(K_S^0 K^\pm \pi^\mp) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{42}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.5	90	AUBERT	08S	BABR	10.6 $e^+e^- \to K_S^0 K^\pm \pi^\mp \gamma$

$\Gamma(K_S^0 K^\pm \pi^\mp \pi^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{43}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
<0.05	90	ABLIKIM 19	BES3	$e^+e^- \to K_S^0 K^\pm \pi^\mp \pi^0$

$\Gamma(K_S^0 K^\pm \pi^\mp \eta) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{44}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
<0.19	90	ABLIKIM 19	BES3	$e^+e^- \to K_S^0 K^\pm \pi^\mp \eta$

$\Gamma(K^+K^-\pi^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{45}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.6	90	AUBERT	08S	BABR	10.6 $e^+e^- \to K^+K^-\pi^0\gamma$

$\Gamma(\chi_{c1}\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{47}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
<1.4	90	[1] HAN 15	BELL	10.58 $e^+e^- \to \chi_{c1}\gamma$

[1] Using $B(\eta \to \gamma\gamma) = (39.41 \pm 0.21)\%$.

$\Gamma(\chi_{c2}\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{48}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
<4.0	90	[1] HAN 15	BELL	10.58 $e^+e^- \to \chi_{c2}\gamma$

[1] Using $B(\eta \to \gamma\gamma) = (39.41 \pm 0.21)\%$.

$\psi(4260)$ BRANCHING RATIOS

$\Gamma(J/\psi f_0(980),\ f_0(980) \to \pi^+\pi^-)/\Gamma(J/\psi\pi^+\pi^-)$ Γ_3/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.17±0.13	[1] LEES	12AC	BABR	10.58 $e^+e^- \to \gamma\pi^+\pi^- J/\psi$

[1] Systematic uncertainties not estimated.

$\Gamma\left(Z_c(3900)^{\pm}\pi^{\mp},\ Z_c^{\pm}\to J/\psi\pi^{\pm}\right)/\Gamma\left(J/\psi\pi^+\pi^-\right)$ $\qquad\Gamma_4/\Gamma_2$

VALUE		DOCUMENT ID		TECN	COMMENT
0.215±0.033±0.075		[1] ABLIKIM	13T	BES3	$e^+e^-\to\pi^+\pi^-J/\psi$

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

0.29 ±0.08		[2] LIU	13B	BELL	$e^+e^-\to$ $\gamma\pi^+\pi^-J/\psi$

[1] Assuming that the cross section of $e^+e^-\to\pi^+\pi^-J/\psi$ is fully due to the $\psi(4260)$.
[2] Systematic error not evaluated.

$\Gamma\left(J/\psi K_S^0 K_S^0\right)/\Gamma_{\text{total}}$ $\qquad\Gamma_7/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	SHEN	14	BELL	9.4–10.9 $e^+e^-\to\gamma K_S^0 K_S^0 J/\psi$

$\Gamma\left(J/\psi\eta\pi^0\right)/\Gamma_{\text{total}}$ $\qquad\Gamma_{12}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	ABLIKIM	15Q	BES3	4.0–4.6 $e^+e^-\to J/\psi\eta\pi^0$

$\Gamma\left(\psi(2S)\pi^+\pi^-\right)/\Gamma\left(J/\psi\pi^+\pi^-\right)$ $\qquad\Gamma_{14}/\Gamma_2$

VALUE	DOCUMENT ID		TECN	COMMENT

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

$(0.11\pm0.03\pm0.03)$ to $(0.55\pm 0.18\pm0.19)$	[1] ZHANG	17C	RVUE	$e^+e^-\to\pi^+\pi^-J/\psi$ or $\psi(2S)$

[1] From a combined fit of BELLE, BABAR and BES3 $e^+e^-\to\pi^+\pi^-J/\psi$ and $e^+e^-\to\pi^+\pi^-\psi(2S)$ data.

$\Gamma\left(h_c(1P)\pi^+\pi^-\right)/\Gamma\left(J/\psi\pi^+\pi^-\right)$ $\qquad\Gamma_{19}/\Gamma_2$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0	90	[1] PEDLAR	11	CLEO	$e^+e^-\to h_c(1P)\pi^+\pi^-$

[1] At $\sqrt{s}=4260$ MeV, PEDLAR 11 measures $\sigma(e^+e^-\to h_c(1P)\pi^+\pi^-)=32\pm17\pm6\pm6$ pb, where the errors are statistical, systematic, and due to uncertainty in $B(\psi(2S)\to\pi^0 h_c(1P))$, respectively.

$\Gamma\left(D\overline{D}\right)/\Gamma\left(J/\psi\pi^+\pi^-\right)$ $\qquad\Gamma_{22}/\Gamma_2$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0	90	[1] AUBERT	07BE	BABR	$e^+e^-\to D\overline{D}\gamma$

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

<4.0	90	CRONIN-HEN..09	CLEO	e^+e^-

[1] Using 4259 ± 10 MeV for the mass and 88 ± 24 MeV for the width of $\psi(4260)$.

$\Gamma\left(D^0\overline{D}^0\right)/\Gamma_{\text{total}}$ $\qquad\Gamma_{23}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	CRONIN-HEN..09		CLEO	$e^+e^-\to D^0\overline{D}^0$

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

not seen	AUBERT	09M	BABR	$e^+e^-\to D^0\overline{D}^0\gamma$
not seen	PAKHLOVA	08	BELL	$e^+e^-\to D^0\overline{D}^0\gamma$

$\Gamma(D^+ D^-)/\Gamma_{total}$ $\qquad$ Γ_{24}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \to D^+ D^-$

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

not seen	AUBERT 09M	BABR	$e^+ e^- \to D^+ D^- \gamma$
not seen	PAKHLOVA 08	BELL	$e^+ e^- \to D^+ D^- \gamma$

$\Gamma(D^* \overline{D} + \text{c.c.})/\Gamma(J/\psi \pi^+ \pi^-)$ $\qquad$ Γ_{25}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<34	90	AUBERT 09M	BABR	$e^+ e^- \to \gamma D^* \overline{D}$

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

<45	90	CRONIN-HEN..09	CLEO	$e^+ e^-$

$\Gamma(D^*(2007)^0 \overline{D}^0 + \text{c.c.})/\Gamma_{total}$ $\qquad$ Γ_{26}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \to D^{*0} \overline{D}^0$

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

not seen	AUBERT 09M	BABR	$e^+ e^- \to D^{*0} \overline{D}^0 \gamma$

$\Gamma(D^*(2010)^+ D^- + \text{c.c.})/\Gamma_{total}$ $\qquad$ Γ_{27}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \to D^{*+} D^-$
not seen	PAKHLOVA 07	BELL	$e^+ e^- \to D^{*+} D^- \gamma$

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

not seen	AUBERT 09M	BABR	$e^+ e^- \to D^{*+} D^- \gamma$

$\Gamma(D^* \overline{D}^*)/\Gamma(J/\psi \pi^+ \pi^-)$ $\qquad$ Γ_{28}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<11	90	CRONIN-HEN..09	CLEO	$e^+ e^-$

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

<40	90	AUBERT 09M	BABR	$e^+ e^- \to \gamma D^* \overline{D}^*$

$\Gamma(D^*(2007)^0 \overline{D}^*(2007)^0)/\Gamma_{total}$ $\qquad$ Γ_{29}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \to D^{*0} \overline{D}^{*0}$

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

not seen	AUBERT 09M	BABR	$e^+ e^- \to D^{*0} \overline{D}^{*0} \gamma$

$\Gamma(D^*(2010)^+ D^*(2010)^-)/\Gamma_{total}$ $\qquad$ Γ_{30}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \to D^{*+} D^{*-}$
not seen	PAKHLOVA 07	BELL	$e^+ e^- \to D^{*+} D^{*-} \gamma$

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

not seen	AUBERT 09M	BABR	$e^+ e^- \to D^{*+} D^{*-} \gamma$

$\Gamma\left(D^0 D^- \pi^+ + \text{c.c. (excl. } D^*(2007)^0 \overline{D}^{*0} + \text{c.c., } D^*(2010)^+ D^- + \text{c.c.)}\right)/\Gamma_{\text{total}}$ $\qquad$ Γ_{32}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	PAKHLOVA 08A	BELL	10.6 $e^+ e^- \rightarrow$ $D^0 D^- \pi^+ \gamma$

$\Gamma\left(D\overline{D}^* \pi + \text{c.c. (excl. } D^*\overline{D}^*)\right)/\Gamma_{\text{total}}$ $\qquad$ Γ_{33}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \rightarrow D^* \overline{D} \pi$

$\Gamma\left(D\overline{D}^* \pi + \text{c.c. (excl. } D^*\overline{D}^*)\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ $\qquad$ Γ_{33}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<15	90	CRONIN-HEN..09	CLEO	$e^+ e^-$

$\Gamma\left(D^0 D^{*-} \pi^+ + \text{c.c. (excl. } D^*(2010)^+ D^*(2010)^-)\right)/\Gamma_{\text{total}}$ $\qquad$ Γ_{34}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	PAKHLOVA 09	BELL	$e^+ e^- \rightarrow$ $D^0 D^{*-} \pi^+ \gamma$

$\Gamma\left(D^0 D^*(2010)^- \pi^+ + \text{c.c.}\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ $\qquad$ Γ_{35}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<9	90	PAKHLOVA 09	BELL	$e^+ e^- \rightarrow D^0 D^{*-} \pi^+$

$\Gamma\left(D^0 D^*(2010)^- \pi^+ + \text{c.c.}\right)/\Gamma_{\text{total}} \times \Gamma\left(e^+ e^-\right)/\Gamma_{\text{total}}$ $\qquad$ $\Gamma_{35}/\Gamma \times \Gamma_1/\Gamma$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.42 × 10⁻⁶	90	[1] PAKHLOVA 09	BELL	$e^+ e^- \rightarrow D^0 D^{*-} \pi^+$

[1] Using 4263^{+8}_{-9} MeV for the mass of $\psi(4260)$.

$\Gamma\left(D^* \overline{D}^* \pi\right)/\Gamma_{\text{total}}$ $\qquad$ Γ_{36}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \rightarrow D^* \overline{D}^* \pi$

$\Gamma\left(D^* \overline{D}^* \pi\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ $\qquad$ Γ_{36}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<8.2	90	CRONIN-HEN..09	CLEO	$e^+ e^-$

$\Gamma\left(D_s^+ D_s^-\right)/\Gamma_{\text{total}}$ $\qquad$ Γ_{37}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	DEL-AMO-SA..10N	BABR	$e^+ e^- \rightarrow D_s^+ D_s^- \gamma$
not seen	CRONIN-HEN..09	CLEO	$e^+ e^- \rightarrow D_s^+ D_s^-$

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

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	PAKHLOVA 11	BELL	$e^+ e^- \rightarrow D_s^+ D_s^- \gamma$

$\Gamma\left(D_s^+ D_s^-\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ $\qquad$ Γ_{37}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.7	95	DEL-AMO-SA..10N	BABR	10.6 $e^+ e^-$

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

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.3	90	CRONIN-HEN..09	CLEO	$e^+ e^-$

$\Gamma\left(D_s^{*+} D_s^- + \text{c.c.}\right)/\Gamma_{\text{total}}$ — Γ_{38}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	DEL-AMO-SA...10N	BABR	$e^+ e^- \to D_s^{*+} D_s^- \gamma$
not seen	CRONIN-HEN...09	CLEO	$e^+ e^- \to D_s^{*+} D_s^-$

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

not seen	PAKHLOVA 11	BELL	$e^+ e^- \to D_s^{*+} D_s^- \gamma$

$\Gamma\left(D_s^{*+} D_s^- + \text{c.c.}\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ — Γ_{38}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
< 0.8	90	CRONIN-HEN...09	CLEO	$e^+ e^-$

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

<44	95	DEL-AMO-SA...10N	BABR	10.6 $e^+ e^-$

$\Gamma\left(D_s^{*+} D_s^{*-}\right)/\Gamma_{\text{total}}$ — Γ_{39}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	CRONIN-HEN...09	CLEO	$e^+ e^- \to D_s^{*+} D_s^{*-}$

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

not seen	PAKHLOVA 11	BELL	$e^+ e^- \to D_s^{*+} D_s^{*-} \gamma$
not seen	DEL-AMO-SA...10N	BABR	$e^+ e^- \to D_s^{*+} D_s^{*-} \gamma$

$\Gamma\left(D_s^{*+} D_s^{*-}\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ — Γ_{39}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
< 9.5	90	CRONIN-HEN...09	CLEO	$e^+ e^-$

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

<30	95	DEL-AMO-SA...10N	BABR	10.6 $e^+ e^-$

$\Gamma\left(p\overline{p}\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ — Γ_{40}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.13	90	[1] AUBERT 06B	BABR	$e^+ e^- \to p\overline{p}\gamma$

[1] Using 4259 ± 10 MeV for the mass and 88 ± 24 MeV for the width of $\psi(4260)$.

$\Gamma\left(p\overline{p}\pi^0\right)/\Gamma\left(J/\psi \pi^+ \pi^-\right)$ — Γ_{41}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<2 × 10⁻⁴	90	ABLIKIM 17F	BES3	$e^+ e^- \to \psi(4260) \to$ hadrons

———— Radiative decays ————

$\Gamma\left(\eta_c(1S)\gamma\right)/\Gamma_{\text{total}}$ — Γ_{46}/Γ

VALUE	DOCUMENT ID	COMMENT
possibly seen	[1] ABLIKIM 17W	$e^+ e^- \to \gamma \eta_c(1S)$

[1] Significance ranges from 4.2 σ to as low as 1.5 σ for a flat component plus $\psi(4260)$ spectrum. Needs confirmation.

$\Gamma\left(\chi_{c1}(3872)\gamma\right)/\Gamma_{\text{total}}$ — Γ_{49}/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
seen	20 ± 5	ABLIKIM 14	BES3	$e^+ e^- \to J/\psi \pi^+ \pi^- \gamma$

$\psi(4260)$ REFERENCES

ABLIKIM	19	PR D99 012003	M. Ablikim *et al.*	(BES III Collab.)
ABLIKIM	17B	PRL 118 092001	M. Ablikim *et al.*	(BES III Collab.)
ABLIKIM	17F	PL B771 45	M. Ablikim *et al.*	(BES III Collab.)
ABLIKIM	17W	PR D96 051101	M. Ablikim *et al.*	(BES III Collab.)
ZHANG	17B	PR D96 054008	J. Zhang, J. Zhang	
ZHANG	17C	EPJ C77 727	J. Zhang, L. Yuan	
ABLIKIM	15Q	PR D92 012008	M. Ablikim *et al.*	(BES III Collab.)
HAN	15	PR D92 012011	Y.L. Han *et al.*	(BELLE Collab.)
ABLIKIM	14	PRL 112 092001	M. Ablikim *et al.*	(BES III Collab.)
SHEN	14	PR D89 072015	C.P. Shen *et al.*	(BELLE Collab.)
ABLIKIM	13T	PRL 110 252001	M. Ablikim *et al.*	(BES III Collab.)
LIU	13B	PRL 110 252002	Z.Q. Liu *et al.*	(BELLE Collab.)
WANG	13B	PR D87 051101	X.L. Wang *et al.*	(BELLE Collab.)
LEES	12AC	PR D86 051102	J.P. Lees *et al.*	(BABAR Collab.)
PAKHLOVA	11	PR D83 011101	G. Pakhlova *et al.*	(BELLE Collab.)
PEDLAR	11	PRL 107 041803	T. Pedlar *et al.*	(CLEO Collab.)
DEL-AMO-SA...	10N	PR D82 052004	P. del Amo Sanchez *et al.*	(BABAR Collab.)
AUBERT	09M	PR D79 092001	B. Aubert *et al.*	(BABAR Collab.)
CRONIN-HEN...	09	PR D80 072001	D. Cronin-Hennessy *et al.*	(CLEO Collab.)
PAKHLOVA	09	PR D80 091101	G. Pakhlova *et al.*	(BELLE Collab.)
AUBERT	08S	PR D77 092002	B. Aubert *et al.*	(BABAR Collab.)
LIU	08H	PR D78 014032	Z.Q. Liu, X.S. Qin, C.Z. Yuan	
PAKHLOVA	08	PR D77 011103	G. Pakhlova *et al.*	(BELLE Collab.)
PAKHLOVA	08A	PRL 100 062001	G. Pakhlova *et al.*	(BELLE Collab.)
YUAN	08	PR D77 011105	C.Z. Yuan *et al.*	(BELLE Collab.)
AUBERT	07AK	PR D76 012008	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07BE	PR D76 111105	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07S	PRL 98 212001	B. Aubert *et al.*	(BABAR Collab.)
PAKHLOVA	07	PRL 98 092001	G. Pakhlova *et al.*	(BELLE Collab.)
WANG	07D	PRL 99 142002	X.L. Wang *et al.*	(BELLE Collab.)
YUAN	07	PRL 99 182004	C.Z. Yuan *et al.*	(BELLE Collab.)
AUBERT	06	PR D73 011101	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	06B	PR D73 012005	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,BE	06D	PR D74 091103	B. Aubert *et al.*	(BABAR Collab.)
COAN	06	PRL 96 162003	T.E. Coan *et al.*	(CLEO Collab.)
HE	06B	PR D74 091104	Q. He *et al.*	(CLEO Collab.)
AUBERT,B	05I	PRL 95 142001	B. Aubert *et al.*	(BABAR Collab.)