

X(4260)

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

Seen in radiative return from e^+e^- collisions at $\sqrt{s} = 9.54\text{--}10.58$ 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 mini-review under the X(3872). (See the index for the page number.)

X(4260) MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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4263⁺⁸₋₉ OUR AVERAGE Error includes scale factor of 1.1.

4247 \pm 12 ⁺¹⁷ ₋₃₂		¹ YUAN	07	BELL	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
4284 ⁺¹⁷ ₋₁₆ \pm 4	13.6	HE	06B	CLEO	9.4–10.6 $e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
4259 \pm 8 ⁺² ₋₆	125	² AUBERT,B	05I	BABR	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

¹ From a two-resonance fit.

² From a single-resonance fit. Two interfering resonances are not excluded.

X(4260) WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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95 \pm 14 OUR AVERAGE

108 \pm 19 \pm 10		³ YUAN	07	BELL	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
73 ⁺³⁹ ₋₂₅ \pm 5	13.6	HE	06B	CLEO	9.4–10.6 $e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$
88 \pm 23 ⁺⁶ ₋₄	125	⁴ AUBERT,B	05I	BABR	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

³ From a two-resonance fit.

⁴ From a single-resonance fit. Two interfering resonances are not excluded.

X(4260) DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 e^+e^-	
Γ_2 $J/\psi\pi^+\pi^-$	seen
Γ_3 $J/\psi\pi^0\pi^0$	[a] seen
Γ_4 $J/\psi K^+K^-$	[a] seen
Γ_5 $J/\psi\eta$	[a] not seen
Γ_6 $J/\psi\pi^0$	[a] not seen
Γ_7 $J/\psi\eta'$	[a] not seen
Γ_8 $J/\psi\pi^+\pi^-\pi^0$	[a] not seen
Γ_9 $J/\psi\eta\eta$	[a] not seen
Γ_{10} $\psi(2S)\pi^+\pi^-$	[a] not seen

Γ_{11}	$\psi(2S)\eta$	[a] not seen
Γ_{12}	$\chi_{c0}\omega$	[a] not seen
Γ_{13}	$\chi_{c1}\gamma$	[a] not seen
Γ_{14}	$\chi_{c2}\gamma$	[a] not seen
Γ_{15}	$\chi_{c1}\pi^+\pi^-\pi^0$	[a] not seen
Γ_{16}	$\chi_{c2}\pi^+\pi^-\pi^0$	[a] not seen
Γ_{17}	$\phi\pi^+\pi^-$	[a] not seen
Γ_{18}	$\phi f_0(980) \rightarrow \phi\pi^+\pi^-$	
Γ_{19}	$D\bar{D}$	not seen
Γ_{20}	$\rho\bar{\rho}$	
Γ_{21}	$K_S^0 K^\pm \pi^\mp$	
Γ_{22}	$K^+ K^- \pi^0$	

[a] See COAN 06 for details.

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

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

VALUE (eV) EVTS DOCUMENT ID TECN COMMENT

$5.9^{+1.2}_{-0.9}$ OUR AVERAGE

$6.0 \pm 1.2^{+4.7}_{-0.5}$ ⁵ YUAN 07 BELL $10.58 e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

$8.9^{+3.9}_{-3.1} \pm 1.8$ 8.1 HE 06B CLEO $9.4\text{--}10.6 e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

$5.5 \pm 1.0^{+0.8}_{-0.7}$ 125 ⁶ AUBERT,B 05I BABR $10.58 e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

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

$20.6 \pm 2.3^{+9.1}_{-1.7}$ ⁷ YUAN 07 BELL $10.58 e^+e^- \rightarrow \gamma\pi^+\pi^- J/\psi$

⁵ Solution I of two equivalent solutions in a fit using two interfering resonances.

⁶ From a single-resonance fit. Two interfering resonances are not excluded.

⁷ Solution II of two equivalent solutions in a fit using two interfering resonances.

$\Gamma(J/\psi K^+K^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_4\Gamma_1/\Gamma$

VALUE (eV) CL% DOCUMENT ID TECN COMMENT

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

<1.2 90 ⁸ YUAN 08 BELL $e^+e^- \rightarrow \gamma K^+K^- J/\psi$

⁸ From a fit of the broad $K^+K^- J/\psi$ enhancement including a coherent $X(4260)$ amplitude with mass and width from YUAN 07.

$\Gamma(\phi\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{17}\Gamma_1/\Gamma$

VALUE (eV) CL% DOCUMENT ID TECN COMMENT

<0.4 90 AUBERT,BE 06D BABR $10.6 e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$

$\Gamma(\phi f_0(980) \rightarrow \phi \pi^+ \pi^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{18} \Gamma_1 / \Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
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<0.28	90	⁹ AUBERT	07AK BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma$
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⁹ AUBERT 07AK reports $[\Gamma(X(4260) \rightarrow \phi f_0(980) \rightarrow \phi \pi^+ \pi^-) \times \Gamma(X(4260) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] < 0.14$ eV. We divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = 0.492$.

$\Gamma(K_S^0 K^\pm \pi^\mp) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{21} \Gamma_1 / \Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.5	90	AUBERT	08S BABR	10.6 $e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp \gamma$
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$\Gamma(K^+ K^- \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{22} \Gamma_1 / \Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.6	90	AUBERT	08S BABR	10.6 $e^+ e^- \rightarrow K^+ K^- \pi^0 \gamma$
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X(4260) BRANCHING RATIOS

$\Gamma(p\bar{p}) / \Gamma(J/\psi \pi^+ \pi^-)$ Γ_{20} / Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<0.13	90	¹⁰ AUBERT	06B	$e^+ e^- \rightarrow p\bar{p} \gamma$
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$\Gamma(D\bar{D}) / \Gamma(J/\psi \pi^+ \pi^-)$ Γ_{19} / Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<1.0	90	¹⁰ AUBERT	07BE BABR	$e^+ e^- \rightarrow D\bar{D} \gamma$
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¹⁰ Using 4259 ± 10 MeV for the mass and 88 ± 24 MeV for the width of X(4260).

X(4260) REFERENCES

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