

ψ(4360)

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

also known as Y(4360); was X(4360)

This state shows properties different from a conventional $q\bar{q}$ state.
A candidate for an exotic structure. See the review on non- $q\bar{q}$ states.

Seen in radiative return from e^+e^- collisions at $\sqrt{s} = 9.54\text{--}10.58$ GeV by AUBERT 07S, WANG 07D, and LEES 14F. See also the review on "Spectroscopy of mesons containing two heavy quarks."

ψ(4360) MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
4374 ± 7	OUR AVERAGE	Error includes scale factor of 2.4. See the ideogram below.		
4371.6 ± 2.5 ± 9.2		¹ ABLIKIM	22AL BES3	$e^+e^- \rightarrow \pi^+\pi^- D^+ D^-$
4298 ± 12 ± 26		² ABLIKIM	22AMBES3	$e^+e^- \rightarrow \pi^+\pi^- J/\psi$
4390.3 ± 6.0 ± 0.7		³ ABLIKIM	21AJ BES3	$e^+e^- \rightarrow \pi^+\pi^- \psi(2S)$
4371.7 ± 7.5 ± 1.8		⁴ ABLIKIM	21AK BES3	$e^+e^- \rightarrow \gamma\chi_{c2} \rightarrow \gamma\gamma J/\psi$
4382.0 ± 13.3 ± 1.7		⁵ ABLIKIM	20O BES3	$e^+e^- \rightarrow \eta J/\psi$
4391.5 ⁺ _− 6.3 6.8 ± 1.0		ABLIKIM	17G BES3	$e^+e^- \rightarrow \pi^+\pi^- h_c$
4347 ± 6 ± 3	279	⁶ WANG	15A BELL	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- \psi(2S)$
4340 ± 16 ± 9	37	⁷ LEES	14F BABR	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- \psi(2S)$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
4406.9 ± 17.2 ± 4.5		⁸ ABLIKIM	22R BES3	$e^+e^- \rightarrow \pi^+\pi^- \chi_{c1}\gamma$
4320.0 ± 10.4 ± 7.0		⁹ ABLIKIM	17B BES3	$e^+e^- \rightarrow \pi^+\pi^- J/\psi$
4383.8 ± 4.2 ± 0.8		¹⁰ ABLIKIM	17V BES3	$e^+e^- \rightarrow \pi^+\pi^- \psi(2S)$
4383.7 ± 2.9 ± 6.2		¹¹ ZHANG	17B RVUE	$e^+e^- \rightarrow \pi^+\pi^- \psi(2S)$
4386.4 ± 2.1 ± 6.4		¹² ZHANG	17C RVUE	$e^+e^- \rightarrow \pi^+\pi^- J/\psi$ or $\psi(2S)$
4355 ⁺ _− 9 10 ± 9	74	¹³ LIU	08H RVUE	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- \psi(2S)$
4324 ± 24		¹⁴ AUBERT	07S BABR	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- \psi(2S)$
4361 ± 9 ± 9	47	⁷ WANG	07D BELL	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^- \psi(2S)$

¹ From a fit to the cross section for $e^+e^- \rightarrow D^+D^-\pi^+\pi^-$ in the range $\sqrt{s} = 4.190\text{--}4.946$ GeV.

² From a three-resonance fit to the Born cross section in the range $\sqrt{s} = 3.7730\text{--}4.7008$ GeV. Parameters depend on the existence or non-existence of a state near 4.5 GeV.

³ From a three-resonance fit to the Born cross section in the range $\sqrt{s} = 4.008\text{--}4.698$ GeV.

⁴ From a five-resonance fit to the cross section for $e^+e^- \rightarrow \gamma\gamma J/\psi \rightarrow \gamma\gamma\ell^+\ell^-$.

⁵ From a fit of the measured cross section in the range $\sqrt{s} = 3.808\text{--}4.600$ GeV.

⁶ From a two-resonance fit. Supersedes WANG 07D.

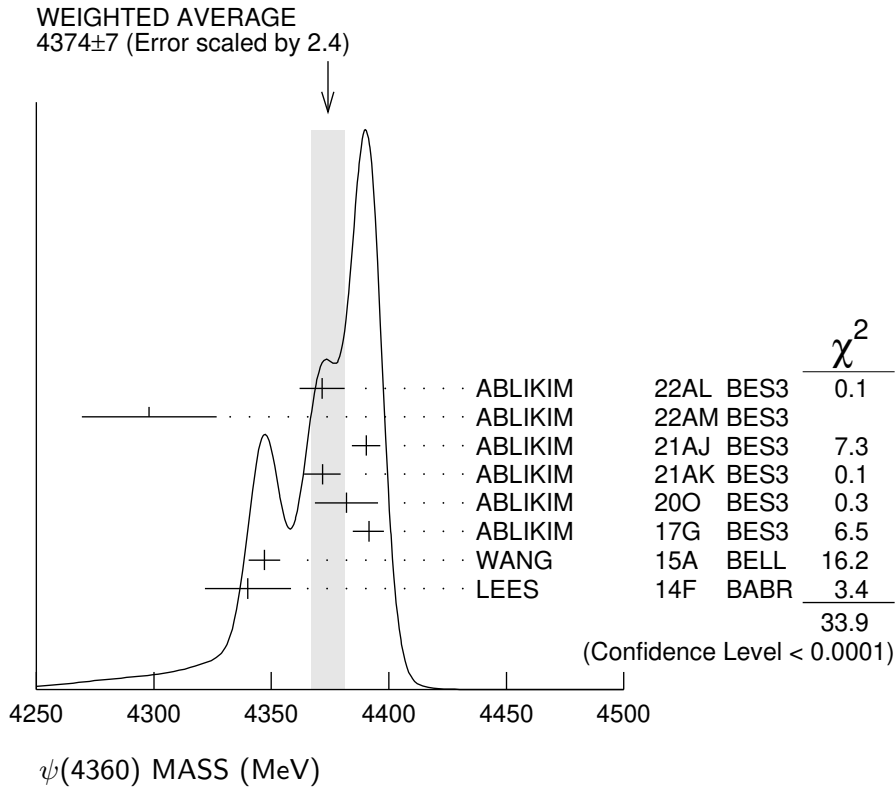
⁷ From a two-resonance fit.

⁸ From a fit to the $e^+e^- \rightarrow \pi^+\pi^- \psi(3823)$ cross section between 4.23 and 4.70 GeV with two coherent Breit-Wigner resonances. The data is also consistent with a single peak with mass $4417.5 \pm 26.2 \pm 3.5$ MeV and width $245 \pm 48 \pm 13$ MeV.

⁹ From a three-resonance fit. Superseded by ABLIKIM 22AM.

¹⁰ From a fit to the cross section for $e^+e^- \rightarrow \pi^+\pi^- \psi(2S) \rightarrow 2(\pi^+\pi^-)\ell^+\ell^-$ obtained from 16 center-of-mass energies between 4.008 and 4.600 GeV and comprising 5.1 fb^{-1} . Superseded by ABLIKIM 21AJ.

- 11 From a three-resonance fit.
- 12 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.
- 13 From a combined fit of AUBERT 07S and WANG 07D data with two resonances.
- 14 From a single-resonance fit. Systematic errors not estimated.



$\psi(4360)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
118 ± 12	OUR AVERAGE	Error includes scale factor of 2.1. See the ideogram below.		
167 ± 4 ± 29		1 ABLIKIM 22AL BES3		$e^+e^- \rightarrow \pi^+\pi^- D^+D^-$
127 ± 17 ± 10		2 ABLIKIM 22AMBES3		$e^+e^- \rightarrow \pi^+\pi^- J/\psi$
143.3 ± 10.0 ± 0.5		3 ABLIKIM 21AJ BES3		$e^+e^- \rightarrow \pi^+\pi^- \psi(2S)$
51.1 ± 17.6 ± 1.9		4 ABLIKIM 21AK BES3		$e^+e^- \rightarrow \gamma \chi_{c2} \rightarrow \gamma \gamma J/\psi$
135.8 ± 60.8 ± 22.5		5 ABLIKIM 20O BES3		$e^+e^- \rightarrow \eta J/\psi$
139.5 ^{+16.2} _{-20.6} ± 0.6		ABLIKIM 17G BES3		$e^+e^- \rightarrow \pi^+\pi^- h_c$
103 ± 9 ± 5	279	6 WANG 15A BELL		10.58 $e^+e^- \rightarrow \gamma \pi^+\pi^- \psi(2S)$
94 ± 32 ± 13	37	7 LEES 14F BABR		10.58 $e^+e^- \rightarrow \gamma \pi^+\pi^- \psi(2S)$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
128.1 ± 37.2 ± 2.3		8 ABLIKIM 22R BES3		$e^+e^- \rightarrow \pi^+\pi^- \chi_{c1} \gamma$
101.4 ^{+25.3} _{-19.7} ± 10.2		9 ABLIKIM 17B BES3		$e^+e^- \rightarrow \pi^+\pi^- J/\psi$
84.2 ± 12.5 ± 2.1		10 ABLIKIM 17V BES3		$e^+e^- \rightarrow \pi^+\pi^- \psi(2S)$
94.2 ± 7.3 ± 2.0		11 ZHANG 17B RVUE		$e^+e^- \rightarrow \pi^+\pi^- \psi(2S)$

96.0 ± 6.7 ± 2.7		¹² ZHANG	17C	RVUE	$e^+e^- \rightarrow \pi^+\pi^- J/\psi$ or $\psi(2S)$
103 ⁺¹⁷ ₋₁₅ ± 11	74	¹³ LIU	08H	RVUE	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$
172 ± 33		¹⁴ AUBERT	07S	BABR	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$
74 ± 15 ± 10	47	⁷ WANG	07D	BELL	10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$

¹ From a fit to the cross section for $e^+e^- \rightarrow D^+D^-\pi^+\pi^-$ in the range $\sqrt{s} = 4.190\text{--}4.946$ GeV.

² From a three-resonance fit to the Born cross section in the range $\sqrt{s} = 3.7730\text{--}4.7008$ GeV. Parameters depend on the existence or non-existence of a state near 4.5 GeV.

³ From a three-resonance fit to the Born cross section in the range $\sqrt{s} = 4.008\text{--}4.698$ GeV.

⁴ From a five-resonance fit to the cross section for $e^+e^- \rightarrow \gamma\gamma J/\psi \rightarrow \gamma\gamma\ell^+\ell^-$.

⁵ From a fit of the measured cross section in the range $\sqrt{s} = 3.808\text{--}4.600$ GeV.

⁶ From a two-resonance fit. Supersedes WANG 07D.

⁷ From a two-resonance fit.

⁸ From a fit to the $e^+e^- \rightarrow \pi^+\pi^-\psi(3823)$ cross section between 4.23 and 4.70 GeV with two coherent Breit-Wigner resonances. The data is also consistent with a single peak with mass $4417.5 \pm 26.2 \pm 3.5$ MeV and width $245 \pm 48 \pm 13$ MeV.

⁹ From a three-resonance fit. Superseded by ABLIKIM 22AM.

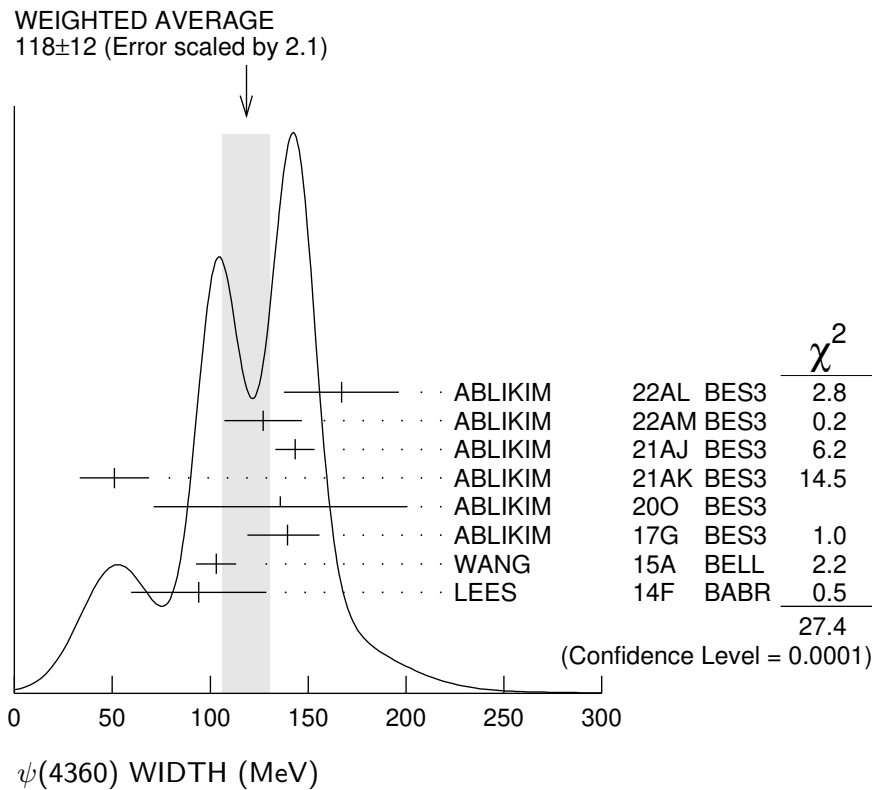
¹⁰ From a fit to the cross section for $e^+e^- \rightarrow \pi^+\pi^-\psi(2S) \rightarrow 2(\pi^+\pi^-\ell^+\ell^-)$ obtained from 16 center-of-mass energies between 4.008 and 4.600 GeV and comprising 5.1 fb^{-1} . Superseded by ABLIKIM 21AJ.

¹¹ From a three-resonance fit.

¹² 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.

¹³ From a combined fit of AUBERT 07S and WANG 07D data with two resonances.

¹⁴ From a single-resonance fit. Systematic errors not estimated.



$\psi(4360)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $e^+ e^-$	seen
Γ_2 $h_c \pi^+ \pi^-$	seen
Γ_3 $J/\psi \pi^+ \pi^-$	seen
Γ_4 $\psi(2S) \pi^+ \pi^-$	seen
Γ_5 $\psi(3770) \pi^+ \pi^-$	possibly seen
Γ_6 $\psi_2(3823) \pi^+ \pi^-$	seen
Γ_7 $J/\psi \eta$	seen
Γ_8 $D^0 D^{*-} \pi^+$	not seen
Γ_9 $D^+ D^- \pi^+ \pi^-$	seen
Γ_{10} $D_1(2420) \bar{D} + \text{c.c.}$	possibly seen
Γ_{11} $\phi \eta$	not seen
Γ_{12} $\omega \pi^0$	not seen
Γ_{13} $\omega \eta$	not seen
Γ_{14} $\rho \bar{\rho} \eta$	not seen
Γ_{15} $\rho \bar{\rho} \omega$	not seen
Γ_{16} $\chi_{c1} \gamma$	not seen
Γ_{17} $\chi_{c2} \gamma$	not seen
Γ_{18} $\Xi^- \Xi^+$	not seen
Γ_{19} $\rho K^- \bar{\Lambda} + \text{c.c.}$	not seen

$\psi(4360) \Gamma(i) \times \Gamma(e^+ e^-) / \Gamma(\text{total})$

$\Gamma(h_c \pi^+ \pi^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$	$\Gamma_2 \Gamma_1 / \Gamma$
<u>VALUE (eV)</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
$11.6^{+5.0}_{-4.4} \pm 1.9$	ABLIKIM 17G BES3 $e^+ e^- \rightarrow \pi^+ \pi^- h_c$

$\Gamma(\psi(2S) \pi^+ \pi^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$	$\Gamma_4 \Gamma_1 / \Gamma$
<u>VALUE (eV)</u> <u>EVTS</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

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

10.7 ± 4.1	1	ABLIKIM	21AJ	BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$
20.7 ± 2.5	2	ABLIKIM	21AJ	BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$
9.9 ± 4.1	3	ABLIKIM	21AJ	BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$
19.4 ± 2.0	4	ABLIKIM	21AJ	BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$
7.3 ± 2.8	5	ABLIKIM	19K	BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$
11.0 ± 3.8	6	ABLIKIM	19K	BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$
9.2 ± 0.6 ± 0.6	279	7	WANG	15A	BELL 10.58 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$
10.9 ± 0.6 ± 0.7	279	8	WANG	15A	BELL 10.58 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$
6.0 ± 1.0 ± 0.5	37	5	LEES	14F	BABR 10.58 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$
7.2 ± 1.0 ± 0.6	37	6	LEES	14F	BABR 10.58 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$
11.1 ^{+1.3} _{-1.2}	74	9	LIU	08H	RVUE 10.58 $e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$

12.3 ± 1.2	74	¹⁰ LIU	08H	RVUE	$10.58 e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$
$10.4 \pm 1.7 \pm 1.5$	47	⁵ WANG	07D	BELL	$10.58 e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$
$11.8 \pm 1.8 \pm 1.4$	47	⁶ WANG	07D	BELL	$10.58 e^+ e^- \rightarrow \gamma \pi^+ \pi^- \psi(2S)$

¹ Solution I of four equivalent solutions in a fit using three interfering resonances. Supersedes ABLIKIM 19K.

² Solution II of four equivalent solutions in a fit using three interfering resonances. Supersedes ABLIKIM 19K.

³ Solution III of four equivalent solutions in a fit using three interfering resonances. Supersedes ABLIKIM 19K.

⁴ Solution IV of four equivalent solutions in a fit using three interfering resonances. Supersedes ABLIKIM 19K.

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

⁶ Solution II of two equivalent solutions in a fit using two interfering resonances.

⁷ Solution I of two equivalent solutions from a fit using two interfering resonances. Supersedes WANG 07D.

⁸ Solution II of two equivalent solutions from a fit using two interfering resonances. Supersedes WANG 07D.

⁹ Solution I in a combined fit of AUBERT 07S and WANG 07D data with two resonances.

¹⁰ Solution II in a combined fit of AUBERT 07S and WANG 07D data with two resonances.

$\Gamma(J/\psi\eta) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_7\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
3.4 ± 2.2		¹ ABLIKIM	200	BES3 $e^+e^- \rightarrow \eta J/\psi$
1.5 ± 1.0		² ABLIKIM	200	BES3 $e^+e^- \rightarrow \eta J/\psi$
1.7 ± 1.1		³ ABLIKIM	200	BES3 $e^+e^- \rightarrow \eta J/\psi$
< 6.8	90	WANG	13B	BELL $e^+e^- \rightarrow J/\psi\eta\gamma$

¹ Solution 1 of three equivalent fit solutions using three resonant structures.

² Solution 2 of three equivalent fit solutions using three resonant structures.

³ Solution 3 of three equivalent fit solutions using three resonant structures.

$\Gamma(\chi_{c1}\gamma) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{16}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
< 0.57	90	¹ HAN	15	BELL $10.58 e^+e^- \rightarrow \chi_{c1}\gamma$

¹ Using $B(\eta \rightarrow \gamma\gamma) = (39.41 \pm 0.21)\%$.

$\Gamma(\chi_{c2}\gamma) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{17}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
< 1.9	90	¹ HAN	15	BELL $10.58 e^+e^- \rightarrow \chi_{c2}\gamma$

¹ Using $B(\eta \rightarrow \gamma\gamma) = (39.41 \pm 0.21)\%$.

$\Gamma(\Xi^- \Xi^+) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{18}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
< 0.0448	90	¹ ABLIKIM	23BK	BES3 $e^+e^- \rightarrow \psi(4360)$

¹ From a fit to $e^+e^- \rightarrow \Xi^- \Xi^+$ cross sections.

$\Gamma(pK^- \bar{\Lambda} + \text{c.c.}) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{19}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
$< 4.7 \times 10^{-3}$	90	¹ ABLIKIM	23BL	BES3 $e^+e^- \rightarrow \psi(4360)$

¹ From a fit to $e^+e^- \rightarrow pK^- \bar{\Lambda} + \text{c.c.}$ cross sections.

$\psi(4360)$ BRANCHING RATIOS

$\Gamma(h_c \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_2/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	ABLIKIM	17G BES3	$e^+ e^- \rightarrow \pi^+ \pi^- h_c$

$\Gamma(\psi(2S) \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_4/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	¹ ABLIKIM	17V BES3	$e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S)$

¹ From a fit to the cross section for $e^+ e^- \rightarrow \pi^+ \pi^- \psi(2S) \rightarrow 2(\pi^+ \pi^-) \ell^+ \ell^-$ obtained from 16 center-of-mass energies between 4.008 and 4.600 GeV and comprising 5.1 fb^{-1} .

$\Gamma(\psi(2S) \pi^+ \pi^-)/\Gamma(J/\psi \pi^+ \pi^-)$ Γ_4/Γ_3

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

$(0.81 \pm 0.12 \pm 0.13)$ to $(42 \pm 15 \pm 15)$	¹ ZHANG	17C RVUE	$e^+ e^- \rightarrow \pi^+ \pi^- J/\psi$ or $\psi(2S)$
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¹ 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.

$\Gamma(\psi(3770) \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_5/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
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possibly seen ¹ ABLIKIM 19AR BES3 $e^+ e^- \rightarrow \pi^+ \pi^- D \bar{D}$

¹ Observe $e^+ e^- \rightarrow \pi^+ \pi^- \psi(3770)$ at $\sqrt{s} = 4.26, 4.36,$ and 4.42 GeV but cannot establish if continuum or resonant.

$\Gamma(\psi_2(3823) \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_6/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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seen ¹ ABLIKIM 22R BES3 $e^+ e^- \rightarrow \pi^+ \pi^- \chi_{c1} \gamma$

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

possibly seen 19 ² ABLIKIM 15S BES3 $e^+ e^- \rightarrow \pi^+ \pi^- \chi_{c1} \gamma$

¹ From a fit to the $e^+ e^- \rightarrow \pi^+ \pi^- \psi(3823)$ cross section between 4.23 and 4.70 GeV with two coherent Breit-Wigner resonances.

² From a fit of $e^+ e^- \rightarrow \pi^+ \pi^- \psi_2(3823), \psi_2(3823) \rightarrow \chi_{c1} \gamma$ cross sections taken at \sqrt{s} values of 4.23, 4.26, 4.36, 4.42, and 4.60 GeV to the $\psi(4360)$ line shape.

$\Gamma(J/\psi \eta)/\Gamma_{\text{total}}$ Γ_7/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
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seen ¹ ABLIKIM 200 BES3 $e^+ e^- \rightarrow \eta J/\psi$

¹ With a significance of 6.0σ .

$\Gamma(D^0 D^{*-} \pi^+)/\Gamma_{\text{total}} \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ $\Gamma_8/\Gamma \times \Gamma_1/\Gamma$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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$<0.72 \times 10^{-6}$ 90 ¹ PAKHLOVA 09 BELL $e^+ e^- \rightarrow \psi(4360) \rightarrow D^0 D^{*-} \pi^+$

¹ Using $4355^{+9}_{-10} \pm 9$ MeV for the mass of $\psi(4360)$.

$\Gamma(D^0 D^{*-} \pi^+)/\Gamma(\psi(2S)\pi^+\pi^-)$ Γ_8/Γ_4

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<8	90	PAKHLOVA 09	BELL	$e^+e^- \rightarrow \psi(4360) \rightarrow D^0 D^{*-} \pi^+$

$\Gamma(D^+ D^- \pi^+ \pi^-)/\Gamma_{total}$ Γ_9/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	¹ ABLIKIM 22AL	BES3	$e^+e^- \rightarrow \pi^+\pi^- D^+ D^-$

¹ From a fit to the cross section for $e^+e^- \rightarrow D^+ D^- \pi^+ \pi^-$ in the range $\sqrt{s} = 4.190\text{--}4.946$ GeV.

$\Gamma(D_1(2420)\bar{D} + c.c.)/\Gamma_{total}$ Γ_{10}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
possibly seen	¹ ABLIKIM 19AR	BES3	$e^+e^- \rightarrow \pi^+\pi^- D\bar{D}$

¹ Evidence for $e^+e^- \rightarrow D_1(2420)\bar{D} + c.c.$ between $\sqrt{s} = 4.3$ and 4.6 GeV, not necessarily resonant.

$\Gamma(\phi\eta)/\Gamma_{total}$ Γ_{11}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	ABLIKIM 23BT	BES3	$e^+e^- \rightarrow \phi\eta$

$\Gamma(\omega\pi^0)/\Gamma_{total}$ Γ_{12}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	ABLIKIM 22K	BES3	$e^+e^- \rightarrow \omega\pi^0$

$\Gamma(\omega\eta)/\Gamma_{total}$ Γ_{13}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	ABLIKIM 22K	BES3	$e^+e^- \rightarrow \omega\eta$

$\Gamma(p\bar{p}\eta)/\Gamma_{total}$ Γ_{14}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	ABLIKIM 21AN	BES3	$e^+e^- \rightarrow p\bar{p}\eta$

$\Gamma(p\bar{p}\omega)/\Gamma_{total}$ Γ_{15}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	ABLIKIM 21AN	BES3	$e^+e^- \rightarrow p\bar{p}\omega$

$\psi(4360)$ REFERENCES

ABLIKIM 23BK	JHEP 2311 228	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 23BL	JHEP 2312 027	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 23BT	PR D108 112011	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 22AL	PR D106 052012	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 22AM	PR D106 072001	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 22K	JHEP 2207 064	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 22R	PRL 129 102003	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 21AJ	PR D104 052012	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 21AK	PR D104 092001	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 21AN	PR D104 092008	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 20O	PR D102 031101	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 19AR	PR D100 032005	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 19K	PR D99 019903 (errata.)	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM 17B	PRL 118 092001	M. Ablikim <i>et al.</i>	(BESIII Collab.)

ABLIKIM	17G	PRL 118 092002	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM	17V	PR D96 032004	M. Ablikim <i>et al.</i>	(BESIII Collab.)
Also		PR D99 019903 (errata.)	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ZHANG	17B	PR D96 054008	J. Zhang, J. Zhang	
ZHANG	17C	EPJ C77 727	J. Zhang, L. Yuan	
ABLIKIM	15S	PRL 115 011803	M. Ablikim <i>et al.</i>	(BESIII Collab.)
HAN	15	PR D92 012011	Y.L. Han <i>et al.</i>	(BELLE Collab.)
WANG	15A	PR D91 112007	X.L. Wang <i>et al.</i>	(BELLE Collab.)
LEES	14F	PR D89 111103	J.P. Lees <i>et al.</i>	(BABAR Collab.)
WANG	13B	PR D87 051101	X.L. Wang <i>et al.</i>	(BELLE Collab.)
PAKHLOVA	09	PR D80 091101	G. Pakhlova <i>et al.</i>	(BELLE Collab.)
LIU	08H	PR D78 014032	Z.Q. Liu, X.S. Qin, C.Z. Yuan	
AUBERT	07S	PRL 98 212001	B. Aubert <i>et al.</i>	(BABAR Collab.)
WANG	07D	PRL 99 142002	X.L. Wang <i>et al.</i>	(BELLE Collab.)
