$\psi(4660)$

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

also known as $Y(4660)$; was $X(4660)$

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 WANG 07D. Also obtained in a combined fit of WANG 07D, AUBERT 07S, and LEES 14F. See also the review on "Spectroscopy of mesons containing two heavy quarks."

$\psi(4660)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
4641 ±10 OUR AVERAGE		Error includes scale factor of 2.7. See the ideogram below.			
$4708\ {}^{+17}_{-15}\ \pm 21$		[1] ABLIKIM	23BI	BES3	$e^+e^- \to K^+K^- J/\psi$
$4701.8 \pm 10.9 \pm 2.7$		[2] ABLIKIM	23H	BES3	$e^+e^- \to \phi\chi_{c2}$
$4675.3 \pm 29.5 \pm 3.5$		[3] ABLIKIM	23X	BES3	$e^+e^- \to D^{*0}D^{*-}\pi^+$
$4651.0 \pm 37.8 \pm 2.1$		[4] ABLIKIM	21AJ	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$
$4619.8\ {}^{+8.9}_{-8.0}\ \pm 2.3$	66	[5] JIA	20	BELL	$e^+e^- \to \gamma D_s^+ D_{s2}^*(2573)^-$
$4625.9\ {}^{+6.2}_{-6.0}\ \pm 0.4$	89	[6] JIA	19A	BELL	$e^+e^- \to \gamma D_s^+ D_{s1}(2536)^-$
$4652\ \pm 10\ \pm 11$	279	[7] WANG	15A	BELL	$10.58\ e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$4669\ \pm 21\ \pm 3$	37	[8] LEES	14F	BABR	$10.58\ e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$4634\ {}^{+8}_{-7}\ {}^{+5}_{-8}$	142	[9] PAKHLOVA	08B	BELL	$e^+e^- \to \Lambda_c^+\Lambda_c^-$

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

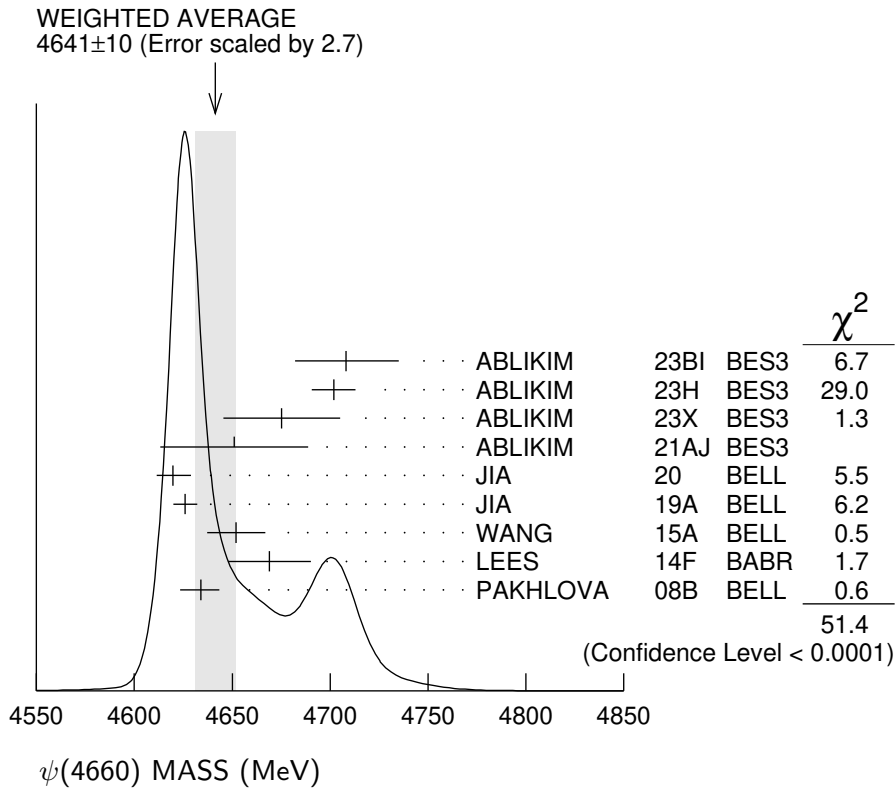| VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$4647.9 \pm 8.6 \pm 0.8$		[10] ABLIKIM	22R	BES3	$e^+e^- \to \pi^+\pi^-\chi_{c1}\gamma$
$4652.5 \pm 3.4 \pm 1.1$		[11] DAI	17	RVUE	$e^+e^- \to \Lambda_c^+\Lambda_c^-$
$4645.2 \pm 9.5 \pm 6.0$		[12] ZHANG	17B	RVUE	$e^+e^- \to \pi^+\pi^-\psi(2S)$
$4646.4 \pm 9.7 \pm 4.8$		[13] ZHANG	17C	RVUE	$e^+e^- \to \pi^+\pi^- J/\psi$ or $\psi(2S)$
$4661\ {}^{+9}_{-8}\ \pm 6$	44	[14] LIU	08H	RVUE	$10.58\ e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$4664\ \pm 11\ \pm 5$	44	WANG	07D	BELL	$10.58\ e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$

[1] Seen as a peak in the c.m. energy dependence of the $e^+e^- \to K^+K^- J/\psi$ cross section using 5.85 fb^{-1} of data at c.m. energies 4.61–4.95 GeV. Statistical significance is over 5σ.

[2] Fit model parameterized as the coherent sum of a Breit-Wigner resonance and a continuum amplitude term.

[3] From a cross-section measurement of $e^+e^- \to D^{*0}D^{*-}\pi^+$ between 4.189 and 4.951 GeV, assuming a coherent sum of 3 Breit-Wigner resonances plus a continuum amplitude. The two other resonances have masses (widths) 4209.6 ± 7.5 (81.6 ± 19.9) MeV and 4469.1 ± 26.4 (246.3 ± 37.9) MeV.

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

[5] Using $D^*_{s2}(2573)^- \to \overline{D}^0 K^-$ decays.

[6] From a fit of a Breit-Wigner convolved with a Gaussian.

[7] From a two-resonance fit. Supersedes WANG 07D.

[8] From a two-resonance fit.

[9] The $\pi^+\pi^-\psi(2S)$ and $\Lambda_c^+\Lambda_c^-$ states are not necessarily the same.

[10] From a fit to the $e^+e^- \to \pi^+\pi^-\psi(3823)$ 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.

[11] The pole parameters are extracted from the speed plot.

[12] From a three-resonance fit.

[13] 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.

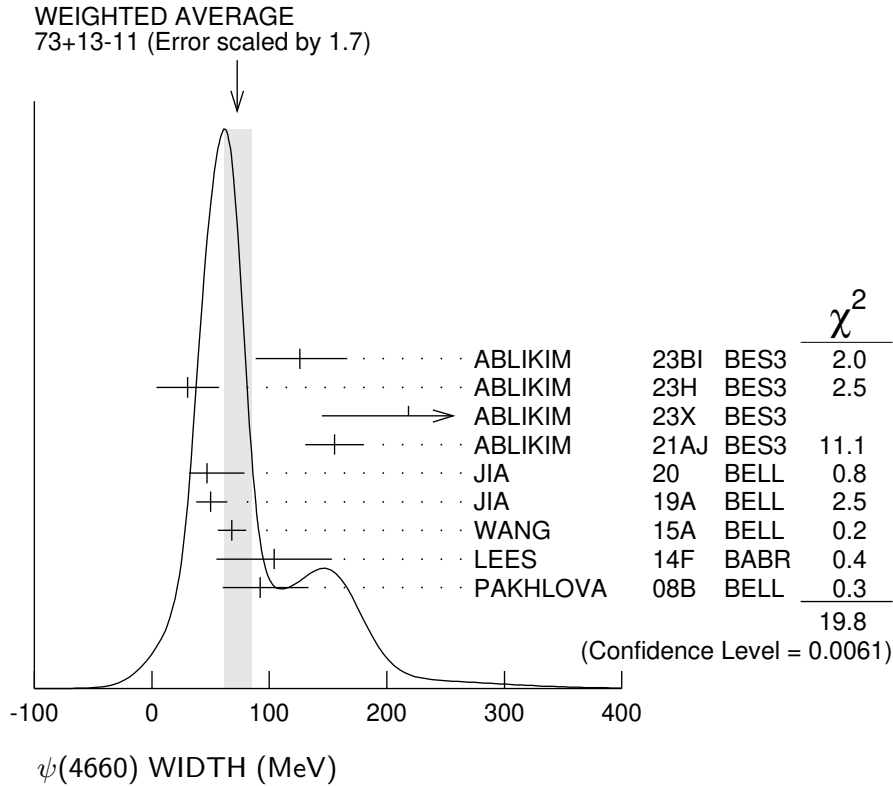[14] From a combined fit of AUBERT 07S and WANG 07D data with two resonances.

WEIGHTED AVERAGE
4641±10 (Error scaled by 2.7)

			χ^2
ABLIKIM	23BI	BES3	6.7
ABLIKIM	23H	BES3	29.0
ABLIKIM	23X	BES3	1.3
ABLIKIM	21AJ	BES3	
JIA	20	BELL	5.5
JIA	19A	BELL	6.2
WANG	15A	BELL	0.5
LEES	14F	BABR	1.7
PAKHLOVA	08B	BELL	0.6
			51.4

(Confidence Level < 0.0001)

$\psi(4660)$ MASS (MeV)

$\psi(4660)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
73 $^{+13}_{-11}$ OUR AVERAGE					Error includes scale factor of 1.7. See the ideogram below.
126 $^{+27}_{-23}$ ±30		[1] ABLIKIM	23BI	BES3	$e^+e^- \to K^+K^- J/\psi$
30.5±22.3±14.6		[2] ABLIKIM	23H	BES3	$e^+e^- \to \phi\chi_{c2}$
218.3±72.9± 9.3		[3] ABLIKIM	23X	BES3	$e^+e^- \to D^{*0}D^{*-}\pi^+$
155.4±24.8± 0.8		[4] ABLIKIM	21AJ	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$
47.0$^{+31.3}_{-14.8}$± 4.6	66	[5] JIA	20	BELL	$e^+e^- \to \gamma D_s^+ D^*_{s2}(2573)^-$

$49.8^{+13.9}_{-11.5} \pm 4.0$	89	[6] JIA	19A	BELL	$e^+e^- \to \gamma D_s^+ D_{s1}(2536)^-$
$68 \pm 11 \pm 5$	279	[7] WANG	15A	BELL	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$104 \pm 48 \pm 10$	37	[8] LEES	14F	BABR	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$92^{+40}_{-24}{}^{+10}_{-21}$	142	[9] PAKHLOVA	08B	BELL	$e^+e^- \to \Lambda_c^+\Lambda_c^-$

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

$33.1 \pm 18.6 \pm 4.1$		[10] ABLIKIM	22R	BES3	$e^+e^- \to \pi^+\pi^-\chi_{c1}\gamma$
$62.6 \pm 5.6 \pm 4.3$		[11] DAI	17	RVUE	$e^+e^- \to \Lambda_c^+\Lambda_c^-$
$113.8 \pm 18.1 \pm 3.4$		[12] ZHANG	17B	RVUE	$e^+e^- \to \pi^+\pi^-\psi(2S)$
$103.5 \pm 15.6 \pm 4.0$		[13] ZHANG	17C	RVUE	$e^+e^- \to \pi^+\pi^- J/\psi$ or $\psi(2S)$
$42^{+17}_{-12} \pm 6$	44	[14] LIU	08H	RVUE	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$48 \pm 15 \pm 3$	44	WANG	07D	BELL	10.58 $e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$

WEIGHTED AVERAGE
73+13-11 (Error scaled by 1.7)

			χ^2
ABLIKIM	23BI	BES3	2.0
ABLIKIM	23H	BES3	2.5
ABLIKIM	23X	BES3	
ABLIKIM	21AJ	BES3	11.1
JIA	20	BELL	0.8
JIA	19A	BELL	2.5
WANG	15A	BELL	0.2
LEES	14F	BABR	0.4
PAKHLOVA	08B	BELL	0.3
			19.8

(Confidence Level = 0.0061)

$\psi(4660)$ WIDTH (MeV)

[1] Seen as a peak in the c.m. energy dependence of the $e^+e^- \to K^+K^- J/\psi$ cross section using 5.85 fb^{-1} of data at c.m. energies 4.61–4.95 GeV. Statistical significance is over 5σ.

[2] Fit model parameterized as the coherent sum of a Breit-Wigner resonance and a continuum amplitude term.

[3] From a cross-section measurement of $e^+e^- \to D^{*0}D^{*-}\pi^+$ between 4.189 and 4.951 GeV, assuming a coherent sum of 3 Breit-Wigner resonances plus a continuum amplitude. The two other resonances have masses (widths) 4209.6 ± 7.5 (81.6 ± 19.9) MeV and 4469.1 ± 26.4 (246.3 ± 37.9) MeV.

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

[5] Using $D^*_{s2}(2573)^- \to \overline{D}^0 K^-$ decays.

[6] From a fit of a Breit-Wigner convolved with a Gaussian.

[7] From a two-resonance fit. Supersedes WANG 07D.

[8] From a two-resonance fit.

[9] The $\pi^+\pi^-\psi(2S)$ and $\Lambda_c^+\Lambda_c^-$ states are not necessarily the same.

[10] From a fit to the $e^+e^- \to \pi^+\pi^-\psi(3823)$ 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.

[11] The pole parameters are extracted from the speed plot.

[12] From a three-resonance fit.

[13] 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.

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

$\psi(4660)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	e^+e^-	not seen
Γ_2	$\psi(2S)\pi^+\pi^-$	seen
Γ_3	$J/\psi\,\eta$	not seen
Γ_4	$D^0 D^{*-}\pi^+$	not seen
Γ_5	$D^{*0} D^{*-}\pi^+$	seen
Γ_6	$\psi_2(3823)\pi^+\pi^-$	seen
Γ_7	$\chi_{c1}\gamma$	not seen
Γ_8	$\chi_{c1}\phi$	not seen
Γ_9	$\chi_{c2}\gamma$	not seen
Γ_{10}	$\chi_{c2}\phi$	not seen
Γ_{11}	$\Lambda_c^+\Lambda_c^-$	seen
Γ_{12}	$D_s^+ D_{s1}(2536)^-$	seen
Γ_{13}	$D_s^+ D^*_{s2}(2573)^-$	seen
Γ_{14}	$\omega\pi^0$	not seen
Γ_{15}	$\omega\eta$	not seen
Γ_{16}	$\Xi^-\overline{\Xi}^+$	not seen
Γ_{17}	$p K^-\overline{\Lambda} +$ c.c.	not seen

$\psi(4660)$ $\Gamma(i) \times \Gamma(e^+e^-)/\Gamma(\text{total})$

$\Gamma(\psi(2S)\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad\qquad\qquad \Gamma_2\Gamma_1/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.7 ± 3.8		[1] ABLIKIM	21AJ	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$
11.2 ± 3.2		[2] ABLIKIM	21AJ	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$
4.7 ± 4.2		[3] ABLIKIM	21AJ	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$
11.3 ± 3.3		[4] ABLIKIM	21AJ	BES3	$e^+e^- \to \pi^+\pi^-\psi(2S)$
$2.0\pm0.3\pm0.2$	279	[5] WANG	15A	BELL	$10.58\ e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$

$8.1\pm1.1\pm1.0$	279	[6] WANG	15A	BELL	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$2.7\pm1.3\pm0.5$	37	[7] LEES	14F	BABR	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$7.5\pm1.7\pm0.7$	37	[8] LEES	14F	BABR	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$2.2^{+0.7}_{-0.6}$	44	[9] LIU	08H	RVUE	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
5.9 ± 1.6	44	[10] LIU	08H	RVUE	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$3.0\pm0.9\pm0.3$	44	[7] WANG	07D	BELL	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$
$7.6\pm1.8\pm0.8$	44	[8] WANG	07D	BELL	10.58	$e^+e^- \to \gamma\pi^+\pi^-\psi(2S)$

[1] Solution I of four equivalent solutions in a fit using three interfering resonances.
[2] Solution II of four equivalent solutions in a fit using three interfering resonances.
[3] Solution III of four equivalent solutions in a fit using three interfering resonances.
[4] Solution IV of four equivalent solutions in a fit using three interfering resonances.
[5] Solution I of two equivalent solutions from a fit using two interfering resonances. Supersedes WANG 07D.
[6] Solution II of two equivalent solutions from a fit using two interfering resonances. Supersedes WANG 07D.
[7] Solution I of two equivalent solutions in a fit using two interfering resonances.
[8] Solution II of two equivalent solutions in a fit using two interfering resonances.
[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.

$\Gamma(J/\psi\eta) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\qquad\qquad\qquad\qquad$ $\Gamma_3\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.94	90	WANG	13B BELL	$e^+e^- \to J/\psi\eta\gamma$

$\Gamma(D^{*0}D^{*-}\pi^+) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\qquad\qquad\qquad$ $\Gamma_5\Gamma_1/\Gamma$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
19 to 2005	[1] ABLIKIM	23X BES3	$e^+e^- \to D^{*0}D^{*-}\pi^+$

[1] From a cross-section measurement of $e^+e^- \to D^{*0}D^{*-}\pi^+$ between 4.189 and 4.951 GeV, assuming a coherent sum of 3 Breit-Wigner resonances plus a continuum amplitude. Depending on solutions I – VIII with same fit qualities.

$\Gamma(\chi_{c1}\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\qquad\qquad\qquad\qquad$ $\Gamma_7\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
<0.45	90	[1] HAN	15 BELL	10.58 $e^+e^- \to \chi_{c1}\gamma$

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

$\Gamma(\chi_{c1}\phi) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\qquad\qquad\qquad\qquad$ $\Gamma_8\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.04	90	[1] ABLIKIM	23H BES3	$e^+e^- \to \phi\chi_{c1}$

[1] Fit model parameterized as the coherent sum of a Breit-Wigner resonance and a continuum amplitude term.

$\Gamma(\chi_{c2}\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\qquad\qquad\qquad\qquad$ $\Gamma_9\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
<2.1	90	[1] HAN	15 BELL	10.58 $e^+e^- \to \chi_{c2}\gamma$

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

$\Gamma(\chi_{c2}\phi) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_{10}\Gamma_1/\Gamma$

VALUE (eV)		DOCUMENT ID		TECN	COMMENT

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

0.13±0.13		[1] ABLIKIM	23H	BES3	$e^+e^- \to \phi\chi_{c2}$

[1] Fit model parameterized as the coherent sum of a Breit-Wigner resonance and a continuum amplitude term. Constructive solution of the interference. Destructive solution gives 0.66 ± 0.41 eV.

$\Gamma(D_s^+ D_{s1}(2536)^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_{12}\Gamma_1/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
$14.3^{+2.8}_{-2.6}\pm1.5$	89	[1] JIA	19A	BELL	$e^+e^- \to \gamma D_s^+ D_{s1}(2536)^-$

[1] Assuming B($D_{s1}(2536)^- \to \overline{D}^{*0} K^-$) = 1.

$\Gamma(D_s^+ D_{s2}^*(2573)^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_{13}\Gamma_1/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
$14.7^{+5.9}_{-4.5}\pm3.6$	66	[1] JIA	20	BELL	$e^+e^- \to \gamma D_s^+ D_{s2}^*(2573)^-$

[1] Assuming B($D_{s2}^*(2573)^- \to \overline{D}^0 K^-$) = 1.

$\Gamma(\Xi^- \overline{\Xi}^+) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_{16}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.0199	90	[1] ABLIKIM	23BK	BES3	$e^+e^- \to \psi(4660)$

[1] From a fit to $e^+e^- \to \Xi^- \overline{\Xi}^+$ cross sections.

$\Gamma(pK^-\overline{\Lambda}+\text{c.c.}) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_{17}\Gamma_1/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
$<2.8 \times 10^{-3}$	90	[1] ABLIKIM	23BL	BES3	$e^+e^- \to \psi(4660)$

[1] From a fit to $e^+e^- \to pK^-\overline{\Lambda}+$ c.c. cross sections.

$\psi(4660)$ $\Gamma(i) \times \Gamma(e^+e^-)/\Gamma^2(\text{total})$

$\Gamma(D^0 D^{*-}\pi^+)/\Gamma_{\text{total}} \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_4/\Gamma \times \Gamma_1/\Gamma$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<0.37 \times 10^{-6}$	90	[1] PAKHLOVA	09	BELL	$e^+e^- \to D^0 D^{*-}\pi^+$

[1] Using $4664 \pm 11 \pm 5$ MeV for the mass of $\psi(4660)$.

$\Gamma(\Lambda_c^+ \Lambda_c^-)/\Gamma_{\text{total}} \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\qquad\qquad$ $\Gamma_{11}/\Gamma \times \Gamma_1/\Gamma$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
$0.68^{+0.16+0.29}_{-0.15-0.30}$	142	[1] PAKHLOVA	08B	BELL	$e^+e^- \to \Lambda_c^+ \Lambda_c^-$

[1] The $\pi^+\pi^-\psi(2S)$ and $\Lambda_c^+ \Lambda_c^-$ states are not necessarily the same.

$\psi(4660)$ BRANCHING RATIOS

$\Gamma(D^0 D^{*-} \pi^+)/\Gamma(\psi(2S)\pi^+\pi^-)$ $\qquad\qquad$ Γ_4/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<10	90	PAKHLOVA	09	BELL	$e^+e^- \to D^0 D^{*-} \pi^+$

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

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

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

$\Gamma(\omega\pi^0)/\Gamma_{total}$ $\qquad\qquad$ Γ_{14}/Γ

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

$\Gamma(\omega\eta)/\Gamma_{total}$ $\qquad\qquad$ Γ_{15}/Γ

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

$\psi(4660)$ REFERENCES

ABLIKIM	23BI	PRL 131 211902	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	23BK	JHEP 2311 228	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	23BL	JHEP 2312 027	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	23H	JHEP 2301 132	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	23X	PRL 130 121901	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	22K	JHEP 2207 064	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	22R	PRL 129 102003	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	21AJ	PR D104 052012	M. Ablikim *et al.*	(BESIII Collab.)
JIA	20	PR D101 091101	S. Jia *et al.*	(BELLE Collab.)
JIA	19A	PR D100 111103	S. Jia *et al.*	(BELLE Collab.)
DAI	17	PR D96 116001	L.-Y. Dai, J. Haidenbauer, U.-G. Meissner	(JULI+)
ZHANG	17B	PR D96 054008	J. Zhang, J. Zhang	
ZHANG	17C	EPJ C77 727	J. Zhang, L. Yuan	
HAN	15	PR D92 012011	Y.L. Han *et al.*	(BELLE Collab.)
WANG	15A	PR D91 112007	X.L. Wang *et al.*	(BELLE Collab.)
LEES	14F	PR D89 111103	J.P. Lees *et al.*	(BABAR Collab.)
WANG	13B	PR D87 051101	X.L. Wang *et al.*	(BELLE Collab.)
PAKHLOVA	09	PR D80 091101	G. Pakhlova *et al.*	(BELLE Collab.)
LIU	08H	PR D78 014032	Z.Q. Liu, X.S. Qin, C.Z. Yuan	
PAKHLOVA	08B	PRL 101 172001	C. Pakhlova *et al.*	(BELLE Collab.)
AUBERT	07S	PRL 98 212001	B. Aubert *et al.*	(BABAR Collab.)
WANG	07D	PRL 99 142002	X.L. Wang *et al.*	(BELLE Collab.)