

$\psi(3770)$

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

$\psi(3770)$ MASS (MeV)

OUR FIT includes measurements of $m_{\psi(2S)}$, $m_{\psi(3770)}$, and $m_{\psi(3770)} - m_{\psi(2S)}$.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
3773.7±0.4 OUR FIT				Error includes scale factor of 1.4.
3778.1±0.7 OUR AVERAGE				
3778.1±0.7±0.6		¹ AAIJ	19M LHCb	$pp \rightarrow D\bar{D} + \text{anything}$
3779.2 ^{+1.8+0.6} _{-1.7-0.8}		² ANASHIN	12A KEDR	$e^+e^- \rightarrow D\bar{D}$
3775.5±2.4±0.5	57	AUBERT	08B BABR	$B \rightarrow D\bar{D}K$
3776 ±5 ±4	68	BRODZICKA	08 BELL	$B^+ \rightarrow D^0\bar{D}^0K^+$
3778.8±1.9±0.9		AUBERT	07BE BABR	$e^+e^- \rightarrow D\bar{D}\gamma$
••• We do not use the following data for averages, fits, limits, etc. •••				
3779.8±0.6		³ SHAMOV	17 RVUE	$e^+e^- \rightarrow D\bar{D}$, hadrons
3772.0±1.9		^{4,5} ABLIKIM	08D BES2	$e^+e^- \rightarrow \text{hadrons}$
3778.4±3.0±1.3	34	CHISTOV	04 BELL	Sup. by BRODZICKA 08

¹ Measured in prompt hadroproduction.

² Taking into account interference between the resonant and non-resonant $D\bar{D}$ production.

³ From the joint analysis of the data on the $D\bar{D}$ and inclusive hadronic cross sections in the $\psi(3770)$ region from BaBar, Belle, BES-II, CLEO and KEDR.

⁴ Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = 0^\circ$.

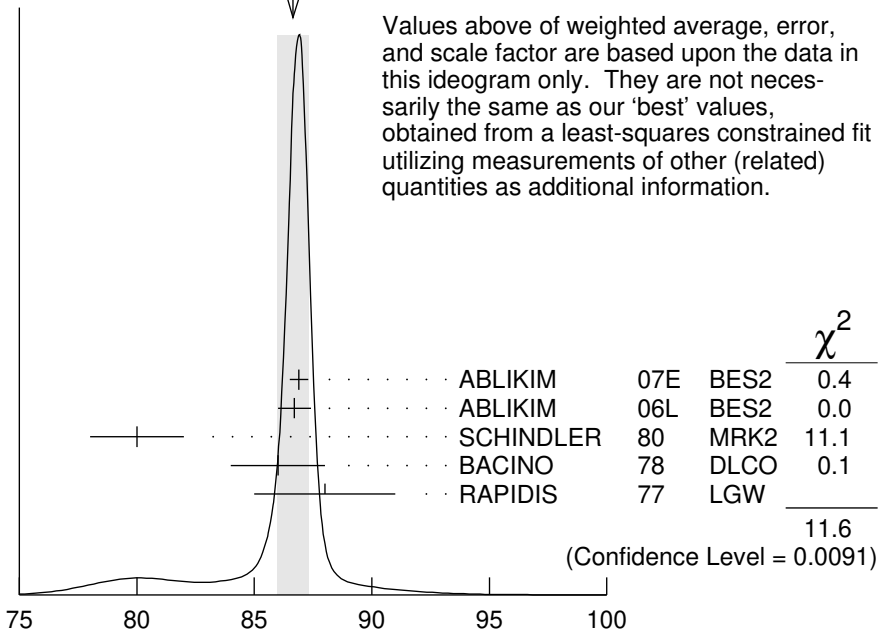
⁵ Interference between the resonant and non-resonant $D\bar{D}$ production not taken into account.

$m_{\psi(3770)} - m_{\psi(2S)}$

OUR FIT includes measurements of $m_{\psi(2S)}$, $m_{\psi(3770)}$, and $m_{\psi(3770)} - m_{\psi(2S)}$.

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
87.6±0.4 OUR FIT			Error includes scale factor of 1.4.
86.6±0.7 OUR AVERAGE			Error includes scale factor of 2.0. See the ideogram below.
86.9±0.4	¹ ABLIKIM	07E BES2	$e^+e^- \rightarrow \text{hadrons}$
86.7±0.7	ABLIKIM	06L BES2	$e^+e^- \rightarrow \text{hadrons}$
80 ±2	SCHINDLER	80 MRK2	e^+e^-
86 ±2	² BACINO	78 DLCO	e^+e^-
88 ±3	RAPIDIS	77 LGW	e^+e^-

WEIGHTED AVERAGE
 86.6 ± 0.7 (Error scaled by 2.0)



- ¹ BES-II $\psi(2S)$ mass subtracted (see ABLIKIM 06L).
² SPEAR $\psi(2S)$ mass subtracted (see SCHINDLER 80).
 $m_{\psi(3770)} - m_{\psi(2S)}$ (MeV)

$\psi(3770)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
27.2 ± 1.0 OUR FIT				
27.5 ± 0.9 OUR AVERAGE				
$24.9^{+4.6+0.5}_{-4.0-1.1}$		¹ ANASHIN	12A KEDR	$e^+e^- \rightarrow D\bar{D}$
30.4 ± 8.5		^{2,3} ABLIKIM	08D BES2	$e^+e^- \rightarrow \text{hadrons}$
$27 \pm 10 \pm 5$	68	BRODZICKA	08 BELL	$B^+ \rightarrow D^0\bar{D}^0 K^+$
$28.5 \pm 1.2 \pm 0.2$		³ ABLIKIM	07E BES2	$e^+e^- \rightarrow \text{hadrons}$
$23.5 \pm 3.7 \pm 0.9$		AUBERT	07BE BABR	$e^+e^- \rightarrow D\bar{D}\gamma$
$26.9 \pm 2.4 \pm 0.3$		³ ABLIKIM	06L BES2	$e^+e^- \rightarrow \text{hadrons}$
24 ± 5		³ SCHINDLER	80 MRK2	e^+e^-
24 ± 5		³ BACINO	78 DLCO	e^+e^-
28 ± 5		³ RAPIDIS	77 LGW	e^+e^-

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

25.8 ± 1.3 ⁴ SHAMOV 17 RVUE $e^+e^- \rightarrow D\bar{D}, \text{hadrons}$

¹ Taking into account interference between the resonant and non-resonant $D\bar{D}$ production.

² Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = 0^\circ$.

³ Interference between the resonant and non-resonant $D\bar{D}$ production not taken into account.

⁴ From the joint analysis of the data on the $D\bar{D}$ and inclusive hadronic cross sections in the $\psi(3770)$ region from BaBar, Belle, BES-II, CLEO and KEDR.

$\psi(3770)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1 $D\bar{D}$	(93 $^{+8}_{-9}$) %	S=2.0
Γ_2 $D^0\bar{D}^0$	(52 $^{+4}_{-5}$) %	S=2.0
Γ_3 D^+D^-	(41 ± 4) %	S=2.0
Γ_4 $J/\psi X$	(5.0 ± 2.2) $\times 10^{-3}$	
Γ_5 $J/\psi\pi^+\pi^-$	(1.93 ± 0.28) $\times 10^{-3}$	
Γ_6 $J/\psi\pi^0\pi^0$	(8.0 ± 3.0) $\times 10^{-4}$	
Γ_7 $J/\psi\eta$	(9 ± 4) $\times 10^{-4}$	
Γ_8 $J/\psi\pi^0$	< 2.8 $\times 10^{-4}$	CL=90%
Γ_9 e^+e^-	(9.6 ± 0.7) $\times 10^{-6}$	S=1.3

Decays to light hadrons

Γ_{10} $b_1(1235)\pi$	< 1.4 $\times 10^{-5}$	CL=90%
Γ_{11} $\phi\eta'$	< 7 $\times 10^{-4}$	CL=90%
Γ_{12} $\omega\eta'$	< 4 $\times 10^{-4}$	CL=90%
Γ_{13} $\rho^0\eta'$	< 6 $\times 10^{-4}$	CL=90%
Γ_{14} $\phi\eta$	(3.1 ± 0.7) $\times 10^{-4}$	
Γ_{15} $\omega\eta$	< 1.4 $\times 10^{-5}$	CL=90%
Γ_{16} $\rho^0\eta$	< 5 $\times 10^{-4}$	CL=90%
Γ_{17} $\phi\pi^0$	< 3 $\times 10^{-5}$	CL=90%
Γ_{18} $\omega\pi^0$	< 6 $\times 10^{-4}$	CL=90%
Γ_{19} $\pi^+\pi^-\pi^0$	< 5 $\times 10^{-6}$	CL=90%
Γ_{20} $\rho\pi$	< 5 $\times 10^{-6}$	CL=90%
Γ_{21} K^+K^-		
Γ_{22} $K^*(892)^+K^- + \text{c.c.}$	< 1.4 $\times 10^{-5}$	CL=90%
Γ_{23} $K^*(892)^0\bar{K}^0 + \text{c.c.}$	< 1.2 $\times 10^{-3}$	CL=90%
Γ_{24} $K_S^0K_L^0$	< 1.2 $\times 10^{-5}$	CL=90%
Γ_{25} $2(\pi^+\pi^-)$	< 1.12 $\times 10^{-3}$	CL=90%
Γ_{26} $2(\pi^+\pi^-)\pi^0$	< 1.06 $\times 10^{-3}$	CL=90%
Γ_{27} $2(\pi^+\pi^-\pi^0)$	< 5.85 %	CL=90%
Γ_{28} $\omega\pi^+\pi^-$	< 6.0 $\times 10^{-4}$	CL=90%
Γ_{29} $3(\pi^+\pi^-)$	< 9.1 $\times 10^{-3}$	CL=90%
Γ_{30} $3(\pi^+\pi^-)\pi^0$	< 1.37 %	CL=90%
Γ_{31} $3(\pi^+\pi^-)2\pi^0$	< 11.74 %	CL=90%
Γ_{32} $\eta\pi^+\pi^-$	< 1.24 $\times 10^{-3}$	CL=90%
Γ_{33} $\pi^+\pi^-2\pi^0$	< 8.9 $\times 10^{-3}$	CL=90%
Γ_{34} $\rho^0\pi^+\pi^-$	< 6.9 $\times 10^{-3}$	CL=90%
Γ_{35} $\eta 3\pi$	< 1.34 $\times 10^{-3}$	CL=90%
Γ_{36} $\eta 2(\pi^+\pi^-)$	< 2.43 %	CL=90%
Γ_{37} $\eta\rho^0\pi^+\pi^-$	< 1.45 %	CL=90%
Γ_{38} $\eta' 3\pi$	< 2.44 $\times 10^{-3}$	CL=90%

Г ₃₉	$K^+ K^- \pi^+ \pi^-$	< 9.0	$\times 10^{-4}$	CL=90%
Г ₄₀	$\phi \pi^+ \pi^-$	< 4.1	$\times 10^{-4}$	CL=90%
Г ₄₁	$K^+ K^- 2\pi^0$	< 4.2	$\times 10^{-3}$	CL=90%
Г ₄₂	$4(\pi^+ \pi^-)$	< 1.67	%	CL=90%
Г ₄₃	$4(\pi^+ \pi^-) \pi^0$	< 3.06	%	CL=90%
Г ₄₄	$\phi f_0(980)$	< 4.5	$\times 10^{-4}$	CL=90%
Г ₄₅	$K^+ K^- \pi^+ \pi^- \pi^0$	< 2.36	$\times 10^{-3}$	CL=90%
Г ₄₆	$K^+ K^- \rho^0 \pi^0$	< 8	$\times 10^{-4}$	CL=90%
Г ₄₇	$K^+ K^- \rho^+ \pi^-$	< 1.46	%	CL=90%
Г ₄₈	$\omega K^+ K^-$	< 3.4	$\times 10^{-4}$	CL=90%
Г ₄₉	$\phi \pi^+ \pi^- \pi^0$	< 3.8	$\times 10^{-3}$	CL=90%
Г ₅₀	$K^{*0} K^- \pi^+ \pi^0 + \text{c.c.}$	< 1.62	%	CL=90%
Г ₅₁	$K^{*+} K^- \pi^+ \pi^- + \text{c.c.}$	< 3.23	%	CL=90%
Г ₅₂	$K^+ K^- \pi^+ \pi^- 2\pi^0$	< 2.67	%	CL=90%
Г ₅₃	$K^+ K^- 2(\pi^+ \pi^-)$	< 1.03	%	CL=90%
Г ₅₄	$K^+ K^- 2(\pi^+ \pi^-) \pi^0$	< 3.60	%	CL=90%
Г ₅₅	$\eta K^+ K^-$	< 4.1	$\times 10^{-4}$	CL=90%
Г ₅₆	$\eta K^+ K^- \pi^+ \pi^-$	< 1.24	%	CL=90%
Г ₅₇	$\rho^0 K^+ K^-$	< 5.0	$\times 10^{-3}$	CL=90%
Г ₅₈	$2(K^+ K^-)$	< 6.0	$\times 10^{-4}$	CL=90%
Г ₅₉	$\phi K^+ K^-$	< 7.5	$\times 10^{-4}$	CL=90%
Г ₆₀	$2(K^+ K^-) \pi^0$	< 2.9	$\times 10^{-4}$	CL=90%
Г ₆₁	$2(K^+ K^-) \pi^+ \pi^-$	< 3.2	$\times 10^{-3}$	CL=90%
Г ₆₂	$K_S^0 K^- \pi^+$	< 3.2	$\times 10^{-3}$	CL=90%
Г ₆₃	$K_S^0 K^- \pi^+ \pi^0$	< 1.33	%	CL=90%
Г ₆₄	$K_S^0 K^- \rho^+$	< 6.6	$\times 10^{-3}$	CL=90%
Г ₆₅	$K_S^0 K^- 2\pi^+ \pi^-$	< 8.7	$\times 10^{-3}$	CL=90%
Г ₆₆	$K_S^0 K^- \pi^+ \rho^0$	< 1.6	%	CL=90%
Г ₆₇	$K_S^0 K^- \pi^+ \eta$	< 1.3	%	CL=90%
Г ₆₈	$K_S^0 K^- 2\pi^+ \pi^- \pi^0$	< 4.18	%	CL=90%
Г ₆₉	$K_S^0 K^- 2\pi^+ \pi^- \eta$	< 4.8	%	CL=90%
Г ₇₀	$K_S^0 K^- \pi^+ 2(\pi^+ \pi^-)$	< 1.22	%	CL=90%
Г ₇₁	$K_S^0 K^- \pi^+ 2\pi^0$	< 2.65	%	CL=90%
Г ₇₂	$K_S^0 K^- K^+ K^- \pi^+$	< 4.9	$\times 10^{-3}$	CL=90%
Г ₇₃	$K_S^0 K^- K^+ K^- \pi^+ \pi^0$	< 3.0	%	CL=90%
Г ₇₄	$K_S^0 K^- K^+ K^- \pi^+ \eta$	< 2.2	%	CL=90%
Г ₇₅	$K^{*0} K^- \pi^+ + \text{c.c.}$	< 9.7	$\times 10^{-3}$	CL=90%
Г ₇₆	$\rho \bar{p}$			
Г ₇₇	$\rho \bar{p} \pi^0$	< 4	$\times 10^{-5}$	CL=90%
Г ₇₈	$\rho \bar{p} \pi^+ \pi^-$	< 5.8	$\times 10^{-4}$	CL=90%
Г ₇₉	$\Lambda \bar{\Lambda}$	< 1.2	$\times 10^{-4}$	CL=90%
Г ₈₀	$\rho \bar{p} \pi^+ \pi^- \pi^0$	< 1.85	$\times 10^{-3}$	CL=90%
Г ₈₁	$\omega \rho \bar{p}$	< 2.9	$\times 10^{-4}$	CL=90%

Γ_{82}	$\Lambda\bar{\Lambda}\pi^0$	< 7	$\times 10^{-5}$	CL=90%
Γ_{83}	$\rho\bar{\rho}2(\pi^+\pi^-)$	< 2.6	$\times 10^{-3}$	CL=90%
Γ_{84}	$\eta\rho\bar{\rho}$	< 5.4	$\times 10^{-4}$	CL=90%
Γ_{85}	$\eta\rho\bar{\rho}\pi^+\pi^-$	< 3.3	$\times 10^{-3}$	CL=90%
Γ_{86}	$\rho^0\rho\bar{\rho}$	< 1.7	$\times 10^{-3}$	CL=90%
Γ_{87}	$\rho\bar{\rho}K^+K^-$	< 3.2	$\times 10^{-4}$	CL=90%
Γ_{88}	$\eta\rho\bar{\rho}K^+K^-$	< 6.9	$\times 10^{-3}$	CL=90%
Γ_{89}	$\pi^0\rho\bar{\rho}K^+K^-$	< 1.2	$\times 10^{-3}$	CL=90%
Γ_{90}	$\phi\rho\bar{\rho}$	< 1.3	$\times 10^{-4}$	CL=90%
Γ_{91}	$\Lambda\bar{\Lambda}\pi^+\pi^-$	< 2.5	$\times 10^{-4}$	CL=90%
Γ_{92}	$\Lambda\bar{\rho}K^+$	< 2.8	$\times 10^{-4}$	CL=90%
Γ_{93}	$\Lambda\bar{\rho}K^+\pi^+\pi^-$	< 6.3	$\times 10^{-4}$	CL=90%
Γ_{94}	$\Lambda\bar{\Lambda}\eta$	< 1.9	$\times 10^{-4}$	CL=90%
Γ_{95}	$\Sigma^+\bar{\Sigma}^-$	< 1.0	$\times 10^{-4}$	CL=90%
Γ_{96}	$\Sigma^0\bar{\Sigma}^0$	< 4	$\times 10^{-5}$	CL=90%
Γ_{97}	$\Xi^+\bar{\Xi}^-$	< 1.5	$\times 10^{-4}$	CL=90%
Γ_{98}	$\Xi^0\bar{\Xi}^0$	< 1.4	$\times 10^{-4}$	CL=90%

Radiative decays

Γ_{99}	$\gamma\chi_{c2}$	< 6.4	$\times 10^{-4}$	CL=90%
Γ_{100}	$\gamma\chi_{c1}$	(2.49 ± 0.23)	$\times 10^{-3}$	
Γ_{101}	$\gamma\chi_{c0}$	(6.9 ± 0.6)	$\times 10^{-3}$	
Γ_{102}	$\gamma\eta_c$	< 7	$\times 10^{-4}$	CL=90%
Γ_{103}	$\gamma\eta_c(2S)$	< 9	$\times 10^{-4}$	CL=90%
Γ_{104}	$\gamma\eta'$	< 1.8	$\times 10^{-4}$	CL=90%
Γ_{105}	$\gamma\eta$	< 1.5	$\times 10^{-4}$	CL=90%
Γ_{106}	$\gamma\pi^0$	< 2	$\times 10^{-4}$	CL=90%

CONSTRAINED FIT INFORMATION

An overall fit to the total width, a partial width, and 3 branching ratios uses 23 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 20.1$ for 19 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta p_i \delta p_j \rangle / (\delta p_i \cdot \delta p_j)$, in percent, from the fit to parameters p_i , including the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_3		99		
x_9		0	0	
Γ		0	0	-44
		x_2	x_3	x_9

Mode	Rate (MeV)	Scale factor
Γ_2 $D^0 \bar{D}^0$	14.0 ± 1.4	1.8
Γ_3 $D^+ D^-$	11.2 ± 1.1	1.7
Γ_9 $e^+ e^-$	$(2.62 \pm 0.18) \times 10^{-4}$	1.4

$\psi(3770)$ PARTIAL WIDTHS

$\Gamma(e^+ e^-)$							Γ_9
VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT			
0.262 ± 0.018 OUR FIT	Error includes scale factor of 1.4.						
0.256 ± 0.016 OUR AVERAGE	Error includes scale factor of 1.2.						
$0.154^{+0.079+0.021}_{-0.058-0.027}$		1,2 ANASHIN	12A KEDR	$e^+ e^- \rightarrow D \bar{D}$			
0.22 ± 0.05		3,4 ABLIKIM	08D BES2	$e^+ e^- \rightarrow$ hadrons			
$0.277 \pm 0.011 \pm 0.013$		4 ABLIKIM	07E BES2	$e^+ e^- \rightarrow$ hadrons			
$0.203 \pm 0.003^{+0.041}_{-0.027}$	1.4M	4,5 BESSON	06 CLEO	$e^+ e^- \rightarrow$ hadrons			
0.276 ± 0.050		4 SCHINDLER	80 MRK2	$e^+ e^-$			
0.18 ± 0.06		4 BACINO	78 DLCO	$e^+ e^-$			
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●							
0.196 ± 0.018		6 SHAMOV	17 RVUE	$e^+ e^- \rightarrow D \bar{D}$, hadrons			
$0.414^{+0.072+0.093}_{-0.080-0.028}$		2,7 ANASHIN	12A KEDR	$e^+ e^- \rightarrow D \bar{D}$			
0.37 ± 0.09		8 RAPIDIS	77 LGW	$e^+ e^-$			
¹ Solution I of the two solutions.							
² Taking into account interference between the resonant and non-resonant $D \bar{D}$ production.							
³ Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = 0^\circ$.							
⁴ Interference between the resonant and non-resonant $D \bar{D}$ production not taken into account.							
⁵ BESSON 06 (as corrected in BESSON 10) measure $\sigma(e^+ e^- \rightarrow \psi(3770) \rightarrow \text{hadrons}) = 6.36 \pm 0.08^{+0.41}_{-0.30}$ nb at $\sqrt{s} = 3773 \pm 1$ MeV, and obtain Γ_{ee} from the Born-level cross section calculated using $\psi(3770)$ mass and width from our 2004 edition, PDG 04.							
⁶ From the joint analysis of the data on the $D \bar{D}$ and inclusive hadronic cross sections in the $\psi(3770)$ region from BaBar, Belle, BES-II, CLEO and KEDR.							
⁷ Solution II of the two solutions.							
⁸ See also $\Gamma(e^+ e^-)/\Gamma_{\text{total}}$ below.							

$\psi(3770)$ BRANCHING RATIOS

$\Gamma(D \bar{D})/\Gamma_{\text{total}}$							$\Gamma_1/\Gamma = (\Gamma_2 + \Gamma_3)/\Gamma$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT			
$0.93^{+0.08}_{-0.09}$ OUR FIT	Error includes scale factor of 2.0.						
$0.93^{+0.08}_{-0.09}$ OUR AVERAGE	Error includes scale factor of 2.1.						
$0.849 \pm 0.056 \pm 0.018$		1 ABLIKIM	08B BES2	$e^+ e^- \rightarrow$ non- $D \bar{D}$			
$1.033 \pm 0.014^{+0.048}_{-0.066}$	1.427M	2 BESSON	06 CLEO	$e^+ e^- \rightarrow$ hadrons			

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

0.836 ± 0.049	³ SHAMOV	17	RVUE	$e^+ e^- \rightarrow D\bar{D}$, hadrons
$0.866 \pm 0.050 \pm 0.036$	^{4,5} ABLIKIM	07K	BES2	$e^+ e^- \rightarrow \text{non-}D\bar{D}$
$0.836 \pm 0.073 \pm 0.042$	⁵ ABLIKIM	06L	BES2	$e^+ e^- \rightarrow D\bar{D}$
$0.855 \pm 0.017 \pm 0.058$	^{5,6} ABLIKIM	06N	BES2	$e^+ e^- \rightarrow D\bar{D}$

¹ Neglecting interference.

² Obtained by comparing a measurement of the total cross section (corrected in BESSON 10) with that of $D\bar{D}$ reported by CLEO in DOBBS 07.

³ From the joint analysis of the data on the $D\bar{D}$ and inclusive hadronic cross sections in the $\psi(3770)$ region from BaBar, Belle, BES-II, CLEO and KEDR.

⁴ Using $\sigma^{obs} = 7.07 \pm 0.58$ nb and neglecting interference.

⁵ Not independent of ABLIKIM 08B.

⁶ From a measurement of $\sigma(e^+ e^- \rightarrow D\bar{D})$ at $\sqrt{s} = 3773$ MeV, using the $\psi(3770)$ resonance parameters measured by ABLIKIM 06L.

$\Gamma(D^0\bar{D}^0)/\Gamma_{total}$					Γ_2/Γ
VALUE	DOCUMENT ID	TECN	COMMENT		

0.52 $^{+0.04}_{-0.05}$ OUR FIT Error includes scale factor of 2.0.

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

$0.467 \pm 0.047 \pm 0.023$	ABLIKIM	06L	BES2	$e^+ e^- \rightarrow D^0\bar{D}^0$
$0.499 \pm 0.013 \pm 0.038$	¹ ABLIKIM	06N	BES2	$e^+ e^- \rightarrow D^0\bar{D}^0$

¹ From a measurement of $\sigma(e^+ e^- \rightarrow D\bar{D})$ at $\sqrt{s} = 3773$ MeV, using the $\psi(3770)$ resonance parameters measured by ABLIKIM 06L.

$\Gamma(D^+ D^-)/\Gamma_{total}$					Γ_3/Γ
VALUE	DOCUMENT ID	TECN	COMMENT		

0.41 ± 0.04 OUR FIT Error includes scale factor of 2.0.

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

$0.369 \pm 0.037 \pm 0.028$	ABLIKIM	06L	BES2	$e^+ e^- \rightarrow D^+ D^-$
$0.357 \pm 0.011 \pm 0.034$	¹ ABLIKIM	06N	BES2	$e^+ e^- \rightarrow D^+ D^-$

¹ From a measurement of $\sigma(e^+ e^- \rightarrow D\bar{D})$ at $\sqrt{s} = 3773$ MeV, using the $\psi(3770)$ resonance parameters measured by ABLIKIM 06L.

$\Gamma(D^0\bar{D}^0)/\Gamma(D^+ D^-)$					Γ_2/Γ_3
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	

1.253 ± 0.016 OUR FIT

1.253 ± 0.016 OUR AVERAGE

$1.252 \pm 0.009 \pm 0.013$	5.3M	BONVICINI	14	CLEO	$e^+ e^- \rightarrow D\bar{D}$
$1.39 \pm 0.31 \pm 0.12$		PAKHLOVA	08	BELL	$10.6 e^+ e^- \rightarrow D\bar{D}\gamma$
$1.78 \pm 0.33 \pm 0.24$		AUBERT	07BE	BABR	$e^+ e^- \rightarrow D\bar{D}\gamma$
$1.27 \pm 0.12 \pm 0.08$		ABLIKIM	06L	BES2	$e^+ e^- \rightarrow D\bar{D}$
$2.43 \pm 1.50 \pm 0.43$	34	¹ CHISTOV	04	BELL	$B^+ \rightarrow \psi(3770) K^+$

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

$1.258 \pm 0.016 \pm 0.014$ ² DOBBS 07 CLEO $e^+ e^- \rightarrow D\bar{D}$

¹ See ADLER 88C for older measurements of this quantity.

² Superseded by BONVICINI 14.

$\Gamma(J/\psi X)/\Gamma_{\text{total}}$ Γ_4/Γ

<u>VALUE (%)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.5±0.2±0.1	¹ ABLIKIM	21Z BES3	$e^+e^- \rightarrow \ell^+\ell^-X$

¹ From a fit to the $e^+e^- \rightarrow J/\psi X$ cross section between 3.645 and 3.891 GeV, with $\psi(2S)$ and $\psi(3770)$ masses, total widths and leptonic widths fixed to the values from the PDG 20. An alternative fit with an improved χ^2 , corresponding to a significance of 5.3σ , uses an additional resonance with a mass of $3766.2 \pm 3.8 \pm 0.4$ MeV/ c^2 , a total width of $22.2 \pm 5.9 \pm 1.4$ MeV, and $\Gamma(e^+e^-) \cdot B(J/\psi X) = 79.4 \pm 85.5 \pm 11.7$ eV, possibly compatible with the results of ABLIKIM 08H.

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

<u>VALUE (units 10^{-3})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1.93±0.28 OUR AVERAGE				
1.89±0.20±0.20	231 ± 33	ADAM	06 CLEO	$e^+e^- \rightarrow \psi(3770)$
3.4 ± 1.4 ± 0.9	17.8 ± 4.8	BAI	05 BES2	$e^+e^- \rightarrow \psi(3770)$

 $\Gamma(J/\psi \pi^0 \pi^0)/\Gamma_{\text{total}}$ Γ_6/Γ

<u>VALUE (units 10^{-2})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.080±0.025±0.016	39 ± 14	ADAM	06 CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<u>VALUE (units 10^{-5})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
87±33±22	22 ± 10	ADAM	06 CLEO	$e^+e^- \rightarrow \psi(3770)$

 $\Gamma(J/\psi \pi^0)/\Gamma_{\text{total}}$ Γ_8/Γ

<u>VALUE (units 10^{-5})</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<28	90	<10	ADAM	06 CLEO	$e^+e^- \rightarrow \psi(3770)$

 $\Gamma(e^+e^-)/\Gamma_{\text{total}}$ Γ_9/Γ

<u>VALUE (units 10^{-5})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.96±0.07 OUR FIT	Error includes scale factor of 1.3.		
1.3 ± 0.2	RAPIDIS	77 LGW	e^+e^-

————— **DECAYS TO LIGHT HADRONS** —————

 $\Gamma(b_1(1235)\pi)/\Gamma_{\text{total}}$ Γ_{10}/Γ

<u>VALUE (units 10^{-5})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<1.4	90	¹ ADAMS	06 CLEO	$e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

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

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<7	90	¹ ADAMS	06 CLEO	$e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

$\Gamma(\omega\eta')/\Gamma_{\text{total}}$ Γ_{12}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<4	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(\rho^0\eta')/\Gamma_{\text{total}}$ Γ_{13}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<6	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(\phi\eta)/\Gamma_{\text{total}}$ Γ_{14}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
$3.1 \pm 0.6 \pm 0.3$		¹ ADAMS	06	CLEO $3.773 e^+e^- \rightarrow \phi\eta$

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

<19	90	² ABLIKIM	07B	BES2 $e^+e^- \rightarrow \psi(3770)$
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¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

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

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
<1.4	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(\rho^0\eta)/\Gamma_{\text{total}}$ Γ_{16}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<5	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(\phi\pi^0)/\Gamma_{\text{total}}$ Γ_{17}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
< 3	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<50	90	² ABLIKIM	07B	BES2 $e^+e^- \rightarrow \psi(3770)$
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¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\omega\pi^0)/\Gamma_{\text{total}}$ Γ_{18}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<6	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{19}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID	TECN	COMMENT
<5	90	1,2 ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Data suggest possible destructive interference with continuum.

² Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(\rho\pi)/\Gamma_{\text{total}}$ Γ_{20}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID	TECN	COMMENT
<5	90	1,2 ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

² Data suggest possible destructive interference with continuum.

 $\Gamma(K^+K^-)/\Gamma_{\text{total}}$ Γ_{21}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$\sim 10^{-5}$	¹ DRUZHININ	15	RVUE $e^+e^- \rightarrow \psi(3770)$

¹ DRUZHININ 15 uses BABAR and CLEO data taking into account interference of the processes $e^+e^- \rightarrow K^+K^-$ and $e^+e^- \rightarrow K_S^0 K_L^0$.

 $\Gamma(K^*(892)^+K^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{22}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
<1.4	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(K^*(892)^0\bar{K}^0 + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{23}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<1.2	90	¹ ADAMS	06	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Comparing cross sections at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, neglecting interference, and using $\sigma(\psi(3770) \rightarrow D\bar{D}) = 6.39 \pm 0.20$ nb.

 $\Gamma(K_S^0 K_L^0)/\Gamma_{\text{total}}$ Γ_{24}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
< 1.2	90	¹ CRONIN-HEN..06	06	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<21	90	² ABLIKIM	04F	BES $e^+e^- \rightarrow \psi(3770)$
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¹ Using $\sigma(e^+e^- \rightarrow \psi(3770) \rightarrow \text{hadrons}) = (6.38 \pm 0.08^{+0.41}_{-0.30})$ nb from BESSON 06 and $B(K_S^0 \rightarrow \pi^+\pi^-) = 0.6895 \pm 0.0014$.

² Using $B(K_S^0 \rightarrow \pi^+\pi^-) = 0.6860 \pm 0.0027$.

 $\Gamma(2(\pi^+\pi^-))/\Gamma_{\text{total}}$ Γ_{25}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<11.2	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<48 90 2 ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(2(\pi^+\pi^-\pi^0))/\Gamma_{total}$ Γ_{26}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<10.6	90	¹ HUANG	06A CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<62 90 2 ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(2(\pi^+\pi^-\pi^0))/\Gamma_{total}$ Γ_{27}/Γ

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<58.5	90	305	ABLIKIM	08N BES2	$e^+e^- \rightarrow \psi(3770)$

$\Gamma(\omega\pi^+\pi^-)/\Gamma_{total}$ Γ_{28}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
< 6.0	90	¹ HUANG	06A CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<55 90 2 ABLIKIM 07I BES2 $3.77 e^+e^-$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(3(\pi^+\pi^-))/\Gamma_{total}$ Γ_{29}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<91	90	¹ ABLIKIM	07B BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(3(\pi^+\pi^-\pi^0))/\Gamma_{total}$ Γ_{30}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<137	90	¹ ABLIKIM	07B BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(3(\pi^+\pi^-)2\pi^0)/\Gamma_{total}$ Γ_{31}/Γ

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<117.4	90	59	ABLIKIM	08N BES2	$e^+e^- \rightarrow \psi(3770)$

$\Gamma(\eta\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{32}/Γ

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<1.24	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<2.3	90	² ABLIKIM	10D	BES2 $e^+e^- \rightarrow \psi(3770)$
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¹ Using $\sigma_{\text{tot}}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{\text{obs}}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\pi^+\pi^-2\pi^0)/\Gamma_{\text{total}}$ Γ_{33}/Γ

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<8.9	90	218	ABLIKIM	08N	BES2 $e^+e^- \rightarrow \psi(3770)$

 $\Gamma(\rho^0\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{34}/Γ

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<6.9	90	¹ ABLIKIM	07F	BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{\text{obs}}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\eta3\pi)/\Gamma_{\text{total}}$ Γ_{35}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<13.4	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{\text{tot}}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

 $\Gamma(\eta2(\pi^+\pi^-))/\Gamma_{\text{total}}$ Γ_{36}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<243	90	¹ ABLIKIM	07B	BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{\text{obs}}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\eta\rho^0\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{37}/Γ

<u>VALUE (units 10^{-2})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<1.45	90	¹ ABLIKIM	10D	BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{\text{obs}}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\eta'3\pi)/\Gamma_{\text{total}}$ Γ_{38}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<24.4	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{\text{tot}}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

 $\Gamma(K^+K^-\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{39}/Γ

<u>VALUE (units 10^{-4})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
< 9.0	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<48 90 2 ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\phi\pi^+\pi^-)/\Gamma_{total}$ Γ_{40}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 4.1	90	¹ HUANG	06A CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<16 90 2 ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(K^+K^-2\pi^0)/\Gamma_{total}$ Γ_{41}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<4.2	90	14	ABLIKIM	08N BES2	$e^+e^- \rightarrow \psi(3770)$

$\Gamma(4(\pi^+\pi^-))/\Gamma_{total}$ Γ_{42}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<16.7	90	¹ ABLIKIM	07F BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(4(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{43}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<30.6	90	¹ ABLIKIM	07F BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\phi f_0(980))/\Gamma_{total}$ Γ_{44}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<4.5	90	¹ HUANG	06A CLEO	$e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

$\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{45}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 23.6	90	¹ HUANG	06A CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<111 90 2 ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(K^+ K^- \rho^0 \pi^0)/\Gamma_{\text{total}}$ Γ_{46}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<8	90	¹ ABLIKIM 07i	BES2	$3.77 e^+ e^-$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(K^+ K^- \rho^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{47}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<146	90	¹ ABLIKIM 07i	BES2	$3.77 e^+ e^-$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\omega K^+ K^-)/\Gamma_{\text{total}}$ Γ_{48}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 3.4	90	¹ HUANG 06A	CLEO	$e^+ e^- \rightarrow \psi(3770)$

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

<66	90	² ABLIKIM 07i	BES2	$3.77 e^+ e^-$
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¹ Using $\sigma_{tot}(e^+ e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\phi \pi^+ \pi^- \pi^0)/\Gamma_{\text{total}}$ Γ_{49}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<38	90	¹ ABLIKIM 07i	BES2	$3.77 e^+ e^-$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(K^{*0} K^- \pi^+ \pi^0 + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{50}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<162	90	¹ ABLIKIM 07i	BES2	$3.77 e^+ e^-$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(K^{*+} K^- \pi^+ \pi^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{51}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<323	90	¹ ABLIKIM 07i	BES2	$3.77 e^+ e^-$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(K^+ K^- \pi^+ \pi^- 2\pi^0)/\Gamma_{\text{total}}$ Γ_{52}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<26.7	90	24	ABLIKIM 08N	BES2	$e^+ e^- \rightarrow \psi(3770)$

$\Gamma(K^+ K^- 2(\pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{53}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<10.3	90	¹ ABLIKIM	07F BES2	$e^+ e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(K^+ K^- 2(\pi^+ \pi^-) \pi^0)/\Gamma_{\text{total}}$ Γ_{54}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<36.0	90	¹ ABLIKIM	07F BES2	$e^+ e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\eta K^+ K^-)/\Gamma_{\text{total}}$ Γ_{55}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 4.1	90	¹ HUANG	06A CLEO	$e^+ e^- \rightarrow \psi(3770)$

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

<31	90	² ABLIKIM	10D BES2	$e^+ e^- \rightarrow \psi(3770)$
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¹ Using $\sigma_{tot}(e^+ e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\eta K^+ K^- \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{56}/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
<1.24	90	¹ ABLIKIM	10D BES2	$e^+ e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\rho^0 K^+ K^-)/\Gamma_{\text{total}}$ Γ_{57}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<5.0	90	¹ ABLIKIM	07F BES2	$e^+ e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(2(K^+ K^-))/\Gamma_{\text{total}}$ Γ_{58}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 6.0	90	¹ HUANG	06A CLEO	$e^+ e^- \rightarrow \psi(3770)$

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

<17	90	² ABLIKIM	07B BES2	$e^+ e^- \rightarrow \psi(3770)$
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¹ Using $\sigma_{tot}(e^+ e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\phi K^+ K^-)/\Gamma_{\text{total}}$ Γ_{59}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 7.5	90	¹ HUANG	06A CLEO	$e^+ e^- \rightarrow \psi(3770)$

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

<24 90 ² ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(2(K^+K^-\pi^0))/\Gamma_{total}$ Γ_{60}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 2.9	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<46 90 ² ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(2(K^+K^-\pi^+\pi^-))/\Gamma_{total}$ Γ_{61}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<3.2	90	¹ ABLIKIM	07F	BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(K_S^0 K^- \pi^+)/\Gamma_{total}$ Γ_{62}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<3.2	90	18	ABLIKIM	08M	BES2 $e^+e^- \rightarrow \psi(3770)$

$\Gamma(K_S^0 K^- \pi^+ \pi^0)/\Gamma_{total}$ Γ_{63}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<13.3	90	40	ABLIKIM	08M	BES2 $e^+e^- \rightarrow \psi(3770)$

$\Gamma(K_S^0 K^- \rho^+)/\Gamma_{total}$ Γ_{64}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<6.6	90	ABLIKIM	09C	BES2 $e^+e^- \rightarrow \psi(3770)$

$\Gamma(K_S^0 K^- 2\pi^+ \pi^-)/\Gamma_{total}$ Γ_{65}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<8.7	90	39	ABLIKIM	08M	BES2 $e^+e^- \rightarrow \psi(3770)$

$\Gamma(K_S^0 K^- \pi^+ \rho^0)/\Gamma_{total}$ Γ_{66}/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
<1.6	90	ABLIKIM	09C	BES2 $e^+e^- \rightarrow \psi(3770)$

$\Gamma(K_S^0 K^- \pi^+ \eta)/\Gamma_{total}$ Γ_{67}/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
<1.3	90	ABLIKIM	09C	BES2 $e^+e^- \rightarrow \psi(3770)$

$\Gamma(K_S^0 K^- 2\pi^+ \pi^- \pi^0)/\Gamma_{\text{total}}$ Γ_{68}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<41.8	90	23	ABLIKIM	08M BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K_S^0 K^- 2\pi^+ \pi^- \eta)/\Gamma_{\text{total}}$ Γ_{69}/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
<4.8	90	ABLIKIM	09C BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K_S^0 K^- \pi^+ 2(\pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{70}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<12.2	90	4	ABLIKIM	08M BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K_S^0 K^- \pi^+ 2\pi^0)/\Gamma_{\text{total}}$ Γ_{71}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<26.5	90	17	ABLIKIM	08M BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K_S^0 K^- K^+ K^- \pi^+)/\Gamma_{\text{total}}$ Γ_{72}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<4.9	90	ABLIKIM	09C BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K_S^0 K^- K^+ K^- \pi^+ \pi^0)/\Gamma_{\text{total}}$ Γ_{73}/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
<3.0	90	ABLIKIM	09C BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K_S^0 K^- K^+ K^- \pi^+ \eta)/\Gamma_{\text{total}}$ Γ_{74}/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
<2.2	90	ABLIKIM	09C BES2	$e^+ e^- \rightarrow \psi(3770)$

 $\Gamma(K^{*0} K^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{75}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<9.7	90	¹ ABLIKIM	07F BES2	$e^+ e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+ e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(p\bar{p})/\Gamma_{\text{total}}$ Γ_{76}/Γ

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

not seen		¹ AAIJ	17AD LHCB	$pp \rightarrow B^+ X \rightarrow p\bar{p}K^+ X$
$7.1^+_{-2.9}$	684	² ABLIKIM	14L BES3	$e^+ e^- \rightarrow \psi(3770)$
310 ± 30	684	³ ABLIKIM	14L BES3	$e^+ e^- \rightarrow \psi(3770)$

¹ AAIJ 17AD reports $B(B^+ \rightarrow \psi(3770)K^+ \rightarrow p\bar{p}K^+)/B(B^+ \rightarrow J/\psi K^+ \rightarrow p\bar{p}K^+) < 0.09$ (0.10) at 90% (95%) CL.

² Solution I of two equivalent solutions in a fit with a resonance interfering with continuum.

³ Solution II of two equivalent solutions in a fit with a resonance interfering with continuum.

$\Gamma(\rho\bar{\rho}\pi^0)/\Gamma_{\text{total}}$ Γ_{77}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 0.4	90	1,2 ABLIKIM 140	BES3	$e^+e^- \rightarrow \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
59 $\begin{smallmatrix} +3 \\ -2 \end{smallmatrix} \pm 5$		1,3 ABLIKIM 140	BES3	$e^+e^- \rightarrow \psi(3770)$
<12	90	4 ABLIKIM 07B	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Calculated by the authors using $\sigma(e^+e^- \rightarrow \psi(3770) \rightarrow \text{hadrons}) = 6.36 \pm 0.08^{+0.41}_{-0.30}$ nb from BESSON 10.

² Solution I of two equivalent solutions in a fit with a resonance interfering with continuum.

³ Solution II of two equivalent solutions in a fit with a resonance interfering with continuum.

⁴ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\rho\bar{\rho}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{78}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 5.8	90	1 HUANG 06A	CLEO	$e^+e^- \rightarrow \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<16	90	2 ABLIKIM 07B	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\Lambda\bar{\Lambda})/\Gamma_{\text{total}}$ Γ_{79}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<1.2 $\times 10^{-4}$	90	1 HUANG 06A	CLEO	$e^+e^- \rightarrow \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<1.8 $\times 10^{-4}$	90	2 ABLIKIM 21AS	BES3	$e^+e^- \rightarrow \psi(3770)$
<4 $\times 10^{-4}$	90	3 ABLIKIM 07F	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² From a measurement of the $e^+e^- \rightarrow \Lambda\bar{\Lambda}$ cross section between 3.5 and 4.6 GeV. At a 90% CL the lower bound is $> 2.4 \times 10^{-6}$.

³ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\rho\bar{\rho}\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{80}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<18.5	90	1 HUANG 06A	CLEO	$e^+e^- \rightarrow \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<73	90	2 ABLIKIM 07B	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

 $\Gamma(\omega\rho\bar{\rho})/\Gamma_{\text{total}}$ Γ_{81}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 2.9	90	1 HUANG 06A	CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<30 90 ² ABLIKIM 07I BES2 3.77 e^+e^-

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.27 \pm 0.27$ nb and neglecting interference.

$\Gamma(\Lambda\bar{\Lambda}\pi^0)/\Gamma_{total}$

Γ_{82}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 0.7	90	¹ ABLIKIM 13Q	BES3	$e^+e^- \rightarrow \psi(3770)$

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

<12 90 ² ABLIKIM 07I BES2 3.77 e^+e^-

¹ Assuming that interference effects between resonance and continuum can be neglected.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\rho\rho^2(\pi^+\pi^-))/\Gamma_{total}$

Γ_{83}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<2.6	90	¹ ABLIKIM 07F	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\eta\rho\rho)/\Gamma_{total}$

Γ_{84}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 5.4	90	¹ HUANG 06A	CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<11 90 ² ABLIKIM 10D BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\eta\rho\rho\pi^+\pi^-)/\Gamma_{total}$

Γ_{85}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<3.3	90	¹ ABLIKIM 10D	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\rho^0\rho\rho)/\Gamma_{total}$

Γ_{86}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<1.7	90	¹ ABLIKIM 07F	BES2	$e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\rho\rho K^+K^-)/\Gamma_{total}$

Γ_{87}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 3.2	90	¹ HUANG 06A	CLEO	$e^+e^- \rightarrow \psi(3770)$

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

<11 90 ² ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\eta\rho\bar{p}K^+K^-)/\Gamma_{total}$ Γ_{88}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<6.9	90	¹ ABLIKIM	10D	BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\pi^0\rho\bar{p}K^+K^-)/\Gamma_{total}$ Γ_{89}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<1.2	90	¹ ABLIKIM	10D	BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\phi\rho\bar{p})/\Gamma_{total}$ Γ_{90}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<1.3	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

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

<9 90 ² ABLIKIM 07B BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\Lambda\bar{\Lambda}\pi^+\pi^-)/\Gamma_{total}$ Γ_{91}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
< 2.5	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

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

< 4.7 90 ² ABLIKIM 13Q BES3 $e^+e^- \rightarrow \psi(3770)$

<39 90 ³ ABLIKIM 07F BES2 $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

² Assuming that interference effects between resonance and continuum can be neglected.

³ Assuming that interference effects between resonance and continuum can be neglected and using $\sigma^{obs}(e^+e^- \rightarrow \psi(3770)) = 7.15 \pm 0.38$ nb.

$\Gamma(\Lambda\bar{p}K^+)/\Gamma_{total}$ Γ_{92}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<2.8	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

$\Gamma(\Lambda\bar{p}K^+\pi^+\pi^-)/\Gamma_{total}$ Γ_{93}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<6.3	90	¹ HUANG	06A	CLEO $e^+e^- \rightarrow \psi(3770)$

¹ Using $\sigma_{tot}(e^+e^- \rightarrow \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.

$\Gamma(\Lambda\bar{\Lambda}\eta)/\Gamma_{\text{total}}$ Γ_{94}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<1.9	90	¹ ABLIKIM	13Q	BES3 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected.

$\Gamma(\Sigma^+\bar{\Sigma}^-)/\Gamma_{\text{total}}$ Γ_{95}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<1.0	90	¹ ABLIKIM	13Q	BES3 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected.

$\Gamma(\Sigma^0\bar{\Sigma}^0)/\Gamma_{\text{total}}$ Γ_{96}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<0.4	90	¹ ABLIKIM	13Q	BES3 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected.

$\Gamma(\Xi^+\bar{\Xi}^-)/\Gamma_{\text{total}}$ Γ_{97}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<1.5	90	¹ ABLIKIM	13Q	BES3 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected.

$\Gamma(\Xi^0\bar{\Xi}^0)/\Gamma_{\text{total}}$ Γ_{98}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
<1.4	90	¹ ABLIKIM	13Q	BES3 $e^+e^- \rightarrow \psi(3770)$

¹ Assuming that interference effects between resonance and continuum can be neglected.

————— RADIATIVE DECAYS —————

$\Gamma(\gamma\chi_{c2})/\Gamma_{\text{total}}$ Γ_{99}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
<0.64	90	¹ ABLIKIM	15J	BES3 $e^+e^- \rightarrow \psi(3770) \rightarrow \gamma\gamma J/\psi$

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

<2.0	90	² BRIERE	06	CLEO $e^+e^- \rightarrow \psi(3770) \rightarrow \gamma + \text{hadrons}$
<0.9	90	³ COAN	06A	CLEO $e^+e^- \rightarrow \psi(3770) \rightarrow \gamma\gamma J/\psi$

¹ This limit is equivalent to $(0.25 \pm 0.21 \pm 0.18) \times 10^{-3}$ branching fraction value.

² Uses $B(\psi(2S) \rightarrow \gamma\chi_{c2}) = 9.22 \pm 0.11 \pm 0.46\%$ from ATHAR 04, $\psi(2S)$ mass and width from PDG 04, and $\Gamma_{ee}(\psi(2S)) = 2.54 \pm 0.03 \pm 0.11$ keV from ADAM 06.

³ Using $\Gamma_{ee}(\psi(2S)) = (2.54 \pm 0.03 \pm 0.11)$ keV from ADAM 06 and taking $\sigma(e^+e^- \rightarrow D\bar{D})$ from HE 05 for $\sigma(e^+e^- \rightarrow \psi(3770))$.

$\Gamma(\gamma\chi_{c1})/\Gamma_{\text{total}}$ Γ_{100}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
2.49 ± 0.23 OUR AVERAGE				
1.98 ± 0.78 ± 0.05	202	¹ ABLIKIM	16B	BES3 $e^+e^- \rightarrow \psi(3770) \rightarrow \gamma + \text{hadrons}$
2.48 ± 0.15 ± 0.23	0.6k	ABLIKIM	15J	BES3 $e^+e^- \rightarrow \psi(3770) \rightarrow \gamma\gamma J/\psi$

2.4 ±0.8 ±0.2		² ABLIKIM	14H	BES3	$e^+e^- \rightarrow \psi(3770) \rightarrow K_S^0 K^\pm \pi^\mp$
2.9 ±0.5 ±0.4		³ BRIERE	06	CLEO	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma + \text{hadrons}, \gamma\gamma J/\psi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
3.9 ±1.4 ±0.6	54	⁴ BRIERE	06	CLEO	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma + \text{hadrons}$
2.8 ±0.5 ±0.4	53	⁵ COAN	06A	CLEO	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma\gamma J/\psi$

¹ ABLIKIM 16B reports $(1.94 \pm 0.42 \pm 0.64) \times 10^{-3}$ from a measurement of $[\Gamma(\psi(3770) \rightarrow \gamma\chi_{c1})/\Gamma_{\text{total}}] / [B(\psi(2S) \rightarrow \gamma\chi_{c1}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c1}(1P)) = (9.55 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c1}(1P)) = (9.75 \pm 0.24) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² ABLIKIM 14H reports $[\Gamma(\psi(3770) \rightarrow \gamma\chi_{c1})/\Gamma_{\text{total}}] \times [B(\chi_{c1}(1P) \rightarrow K_S^0 K^\pm \pi^\mp)] = (8.51 \pm 2.39 \pm 1.42) \times 10^{-6}$ which we divide by our best value $B(\chi_{c1}(1P) \rightarrow K_S^0 K^\pm \pi^\mp) = 0.00349 \pm 0.00029$. Our first error is their experiment's error and our second error is the systematic error from using our best value. We have calculated the best value of $B(\chi_{c1}(1P) \rightarrow K_S^0 K^\pm \pi^\mp)$ as 1/2 of $B(\chi_{c1}(1P) \rightarrow \bar{K}^0 K^+ \pi^- + \text{c.c.}) = (7.0 \pm 0.6) \times 10^{-3}$.

³ Averages the two measurements from COAN 06A and BRIERE 06.

⁴ Uses $B(\psi(2S) \rightarrow \gamma\chi_{c1}) = 9.07 \pm 0.11 \pm 0.54\%$ from ATHAR 04, $\psi(2S)$ mass and width from PDG 04, and $\Gamma_{ee}(\psi(2S)) = 2.54 \pm 0.03 \pm 0.11$ keV from ADAM 06.

⁵ Using $\Gamma_{ee}(\psi(2S)) = (2.54 \pm 0.03 \pm 0.11)$ keV from ADAM 06 and taking $\sigma(e^+e^- \rightarrow D\bar{D})$ from HE 05 for $\sigma(e^+e^- \rightarrow \psi(3770))$.

$\Gamma(\gamma\chi_{c1})/\Gamma(J/\psi\pi^+\pi^-)$					Γ_{100}/Γ_5
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
1.49±0.31±0.26	53 ± 10	¹ COAN	06A	CLEO	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma\gamma J/\psi$

¹ Using $B(\psi(3770) \rightarrow J/\psi\pi^+\pi^-) = (1.89 \pm 0.20 \pm 0.20) \times 10^{-3}$ from ADAM 06.

$\Gamma(\gamma\chi_{c0})/\Gamma_{\text{total}}$					Γ_{101}/Γ
<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
6.9±0.6 OUR AVERAGE					

6.7±0.7±0.1	2.2k	¹ ABLIKIM	16B	BES3	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma + \text{hadrons}$
7.3±0.7±0.6	274	BRIERE	06	CLEO	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma + \text{hadrons}$

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

< 44	90	² COAN	06A	CLEO	$e^+e^- \rightarrow \psi(3770) \rightarrow \gamma\gamma J/\psi$
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¹ ABLIKIM 16B reports $(6.88 \pm 0.28 \pm 0.67) \times 10^{-3}$ from a measurement of $[\Gamma(\psi(3770) \rightarrow \gamma\chi_{c0})/\Gamma_{\text{total}}] / [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Using $\Gamma_{ee}(\psi(2S)) = (2.54 \pm 0.03 \pm 0.11)$ keV from ADAM 06 and taking $\sigma(e^+e^- \rightarrow D\bar{D})$ from HE 05 for $\sigma(e^+e^- \rightarrow \psi(3770))$.

$\Gamma(\gamma\chi_{c0})/\Gamma(\gamma\chi_{c2})$ Γ_{101}/Γ_{99}

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

>8	90	¹ BRIERE	06	CLEO $e^+e^- \rightarrow \psi(3770)$
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¹ Not independent of other results in BRIERE 06. $\Gamma(\gamma\chi_{c0})/\Gamma(\gamma\chi_{c1})$ $\Gamma_{101}/\Gamma_{100}$

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

2.5 ± 0.6		¹ BRIERE	06	CLEO $e^+e^- \rightarrow \psi(3770)$
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¹ Not independent of other results in BRIERE 06. $\Gamma(\gamma\eta_c)/\Gamma_{\text{total}}$ Γ_{102}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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$< 7 \times 10^{-4}$	90	¹ ABLIKIM	14H	BES3
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¹ ABLIKIM 14H reports $[\Gamma(\psi(3770) \rightarrow \gamma\eta_c)/\Gamma_{\text{total}}] \times [B(\eta_c(1S) \rightarrow K_S^0 K^\pm \pi^\mp)] < 16 \times 10^{-6}$ which we divide by our best value $B(\eta_c(1S) \rightarrow K_S^0 K^\pm \pi^\mp) = 2.42 \times 10^{-2}$.We have calculated the best value of $B(\eta_c(1S) \rightarrow K_S^0 K^\pm \pi^\mp)$ as 1/3 of $B(\eta_c(1S) \rightarrow K\bar{K}\pi) = 7.3 \times 10^{-2}$. $\Gamma(\gamma\eta_c(2S))/\Gamma_{\text{total}}$ Γ_{103}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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$< 9 \times 10^{-4}$	90	¹ ABLIKIM	14H	BES3
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¹ ABLIKIM 14H reports $[\Gamma(\psi(3770) \rightarrow \gamma\eta_c(2S))/\Gamma_{\text{total}}] \times [B(\eta_c(2S) \rightarrow K_S^0 K^\pm \pi^\mp)] < 5.6 \times 10^{-6}$ which we divide by our best value $B(\eta_c(2S) \rightarrow K_S^0 K^\pm \pi^\mp) = 6 \times 10^{-3}$.We have calculated the best value of $B(\eta_c(2S) \rightarrow K_S^0 K^\pm \pi^\mp)$ as 1/3 of $B(\eta_c(2S) \rightarrow K\bar{K}\pi) = 1.9 \times 10^{-2}$. $\Gamma(\gamma\eta)/\Gamma_{\text{total}}$ Γ_{104}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
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< 1.8	90	¹ PEDLAR	09	CLE3 $\psi(2S) \rightarrow \gamma X$
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¹ Assuming maximal destructive interference between $\psi(3770)$ and continuum sources. $\Gamma(\gamma\eta)/\Gamma_{\text{total}}$ Γ_{105}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
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< 1.5	90	¹ PEDLAR	09	CLE3 $\psi(2S) \rightarrow \gamma X$
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¹ Assuming maximal destructive interference between $\psi(3770)$ and continuum sources. $\Gamma(\gamma\pi^0)/\Gamma_{\text{total}}$ Γ_{106}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
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< 2	90	PEDLAR	09	CLE3 $\psi(2S) \rightarrow \gamma X$
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$\psi(3770)$ REFERENCES

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ABLIKIM	21Z	PRL 127 082002	M. Ablikim <i>et al.</i>	(BESIII Collab.)
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AAIJ	19M	JHEP 1907 035	R. Aaij <i>et al.</i>	(LHCb Collab.)
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SHAMOV	17	PL B769 187	A.G. Shamov, K.Yu. Todyshev	
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ABLIKIM	15J	PR D91 092009	M. Ablikim <i>et al.</i>	(BESIII Collab.)
DRUZHININ	15	PR D92 054024	V.P. Druzhinin	(NOVO)
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