$\psi(3770)$

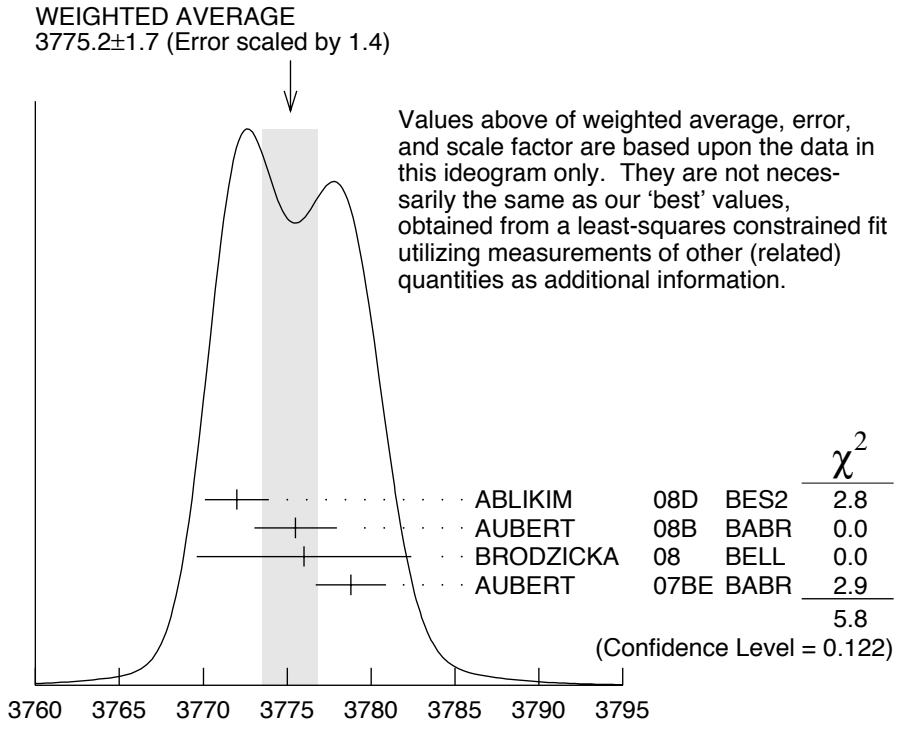
$I^G(J^{PC}) = 0^-(1^{--})$

$\psi(3770)$ MASS

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*
3772.92±0.35 OUR FIT Error includes scale factor of 1.1.				
3775.2 ±1.7 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.				
3772.0 ±1.9		[1] ABLIKIM	08D BES2	$e^+e^- \to$ hadrons
3775.5 ±2.4 ±0.5	57	AUBERT	08B BABR	$B \to D\overline{D}K$
3776 ±5 ±4	68	BRODZICKA	08 BELL	$B^+ \to D^0\overline{D}^0K^+$
3778.8 ±1.9 ±0.9		AUBERT	07BE BABR	$e^+e^- \to D\overline{D}\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3778.4 ±3.0 ±1.3	34	CHISTOV	04 BELL	Sup. by BRODZICKA 08

[1] 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 $\delta = 0^\circ$.



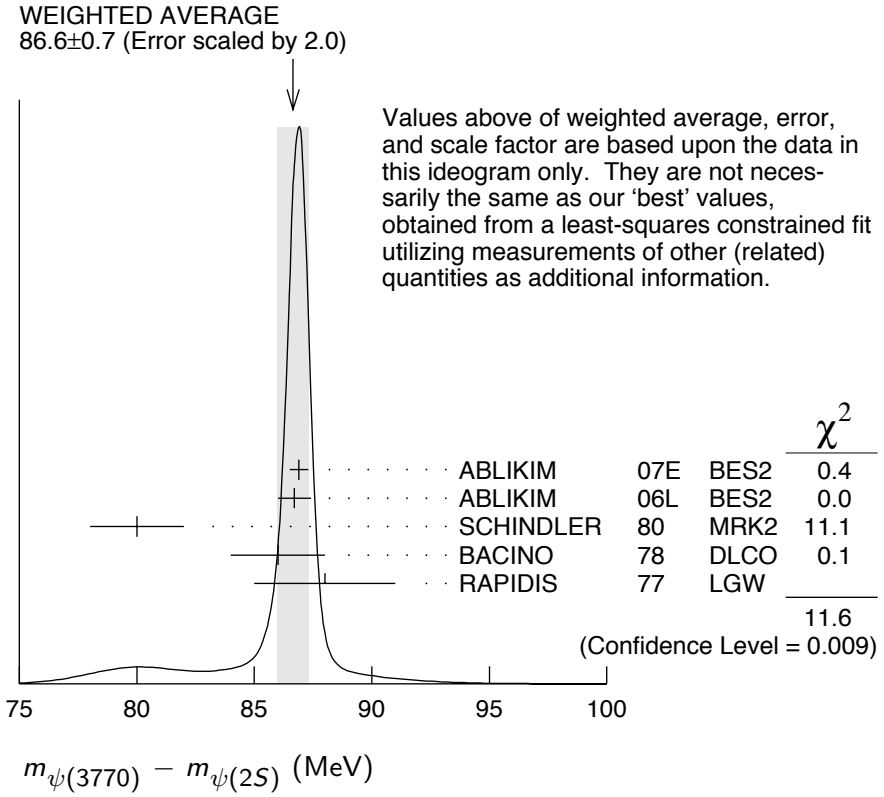
$m_{\psi(3770)} - m_{\psi(2S)}$

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

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
86.83±0.35 OUR FIT Error includes scale factor of 1.1.				
86.6 ±0.7 OUR AVERAGE Error includes scale factor of 2.0. See the ideogram below.				
86.9 ±0.4	[2] ABLIKIM	07E	BES2	$e^+e^- \to$ hadrons
86.7 ±0.7	ABLIKIM	06L	BES2	$e^+e^- \to$ hadrons
80 ±2	SCHINDLER	80	MRK2	e^+e^-
86 ±2	[3] BACINO	78	DLCO	e^+e^-
88 ±3	RAPIDIS	77	LGW	e^+e^-

[2] BES-II $\psi(2S)$ mass subtracted (see ABLIKIM 06L).

[3] SPEAR $\psi(2S)$ mass subtracted (see SCHINDLER 80).



$\psi(3770)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
27.3± 1.0 OUR FIT					
27.6± 1.0 OUR AVERAGE					
30.4± 8.5		[4] ABLIKIM	08D	BES2	$e^+e^- \to$ hadrons
27 ±10 ±5	68	BRODZICKA	08	BELL	$B^+ \to D^0\overline{D}^0K^+$
28.5± 1.2±0.2		ABLIKIM	07E	BES2	$e^+e^- \to$ hadrons
23.5± 3.7±0.9		AUBERT	07BE	BABR	$e^+e^- \to D\overline{D}\gamma$

26.9± 2.4±0.3	ABLIKIM	06L	BES2	e^+e^-	→ hadrons
24 ± 5	SCHINDLER	80	MRK2	e^+e^-	
24 ± 5	BACINO	78	DLCO	e^+e^-	
28 ± 5	RAPIDIS	77	LGW	e^+e^-	

[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 $\delta = 0^\circ$.

$\psi(3770)$ DECAY MODES

In addition to the dominant decay mode to $D\overline{D}$, $\psi(3770)$ was found to decay into the final states containing the J/ψ (BAI 05, ADAM 06). ADAMS 06 and HUANG 06A searched for various decay modes with light hadrons and found a statistically significant signal for the decay to $\phi\eta$ only (ADAMS 06).

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1	$D\overline{D}$	(85.3 ±3.2) %	
Γ_2	$D^0\overline{D}^0$	(48.7 ±3.2) %	
Γ_3	D^+D^-	(36.1 ±2.8) %	
Γ_4	$J/\psi\pi^+\pi^-$	(1.93±0.28) × 10^{-3}	
Γ_5	$J/\psi\pi^0\pi^0$	(8.0 ±3.0) × 10^{-4}	
Γ_6	$J/\psi\eta$	(9 ±4) × 10^{-4}	
Γ_7	$J/\psi\pi^0$	< 2.8 × 10^{-4}	CL=90%
Γ_8	$\gamma\chi_{c0}$	(7.3 ±0.9) × 10^{-3}	
Γ_9	$\gamma\chi_{c1}$	(2.9 ±0.6) × 10^{-3}	
Γ_{10}	$\gamma\chi_{c2}$	< 9 × 10^{-4}	CL=90%
Γ_{11}	e^+e^-	(9.7 ±0.7) × 10^{-6}	S=1.2
Γ_{12}	$K^0_S K^0_L$	< 1.2 × 10^{-5}	CL=90%
Γ_{13}	$2(\pi^+\pi^-)$	< 1.12 × 10^{-3}	CL=90%
Γ_{14}	$2(\pi^+\pi^-)\pi^0$	< 1.06 × 10^{-3}	CL=90%
Γ_{15}	$\omega\pi^+\pi^-$	< 6.0 × 10^{-4}	CL=90%
Γ_{16}	$3(\pi^+\pi^-)$	< 9.1 × 10^{-3}	
Γ_{17}	$3(\pi^+\pi^-)\pi^0$	< 1.37 %	
Γ_{18}	$\eta\pi^+\pi^-$	< 1.24 × 10^{-3}	CL=90%
Γ_{19}	$\rho^0\pi^+\pi^-$	< 6.9 × 10^{-3}	CL=90%
Γ_{20}	$\eta 3\pi$	< 1.34 × 10^{-3}	CL=90%
Γ_{21}	$\eta 2(\pi^+\pi^-)$	< 2.43 %	
Γ_{22}	$\eta' 3\pi$	< 2.44 × 10^{-3}	CL=90%
Γ_{23}	$K^+K^-\pi^+\pi^-$	< 9.0 × 10^{-4}	CL=90%
Γ_{24}	$\phi\pi^+\pi^-$	< 4.1 × 10^{-4}	CL=90%
Γ_{25}	$\phi\pi^0$	not seen	
Γ_{26}	$\phi\eta$	(3.1 ±0.7) × 10^{-4}	
Γ_{27}	$4(\pi^+\pi^-)$	< 1.67 %	CL=90%
Γ_{28}	$4(\pi^+\pi^-)\pi^0$	< 3.06 %	CL=90%

Γ_{29}	$\phi f_0(980)$	$<$	4.5	$\times 10^{-4}$	CL=90%
Γ_{30}	$K^+K^-\pi^+\pi^-\pi^0$	$<$	2.36	$\times 10^{-3}$	CL=90%
Γ_{31}	$K^+K^-\rho^0\pi^0$	$<$	8	$\times 10^{-4}$	CL=90%
Γ_{32}	$K^+K^-\rho^+\pi^-$	$<$	1.46	%	CL=90%
Γ_{33}	ωK^+K^-	$<$	3.4	$\times 10^{-4}$	CL=90%
Γ_{34}	$\phi\pi^+\pi^-\pi^0$	$<$	3.8	$\times 10^{-3}$	CL=90%
Γ_{35}	$K^{*0}K^-\pi^+\pi^0$ + c.c.	$<$	1.62	%	CL=90%
Γ_{36}	$K^{*+}K^-\pi^+\pi^-$ + c.c.	$<$	3.23	%	CL=90%
Γ_{37}	$K^+K^-2(\pi^+\pi^-)$	$<$	1.03	%	CL=90%
Γ_{38}	$K^+K^-2(\pi^+\pi^-)\pi^0$	$<$	3.60	%	CL=90%
Γ_{39}	ηK^+K^-	$<$	4.1	$\times 10^{-4}$	CL=90%
Γ_{40}	$\rho^0 K^+K^-$	$<$	5.0	$\times 10^{-3}$	CL=90%
Γ_{41}	$2(K^+K^-)$	$<$	6.0	$\times 10^{-4}$	CL=90%
Γ_{42}	ϕK^+K^-	$<$	7.5	$\times 10^{-4}$	CL=90%
Γ_{43}	$2(K^+K^-)\pi^0$	$<$	2.9	$\times 10^{-4}$	CL=90%
Γ_{44}	$2(K^+K^-)\pi^+\pi^-$	$<$	3.2	$\times 10^{-3}$	CL=90%
Γ_{45}	$K^{*0}K^-\pi^+$ + c.c.	$<$	9.7	$\times 10^{-3}$	CL=90%
Γ_{46}	$p\overline{p}\pi^0$	$<$	1.2	$\times 10^{-3}$	
Γ_{47}	$p\overline{p}\pi^+\pi^-$	$<$	5.8	$\times 10^{-4}$	CL=90%
Γ_{48}	$\Lambda\overline{\Lambda}$	$<$	1.2	$\times 10^{-4}$	CL=90%
Γ_{49}	$p\overline{p}\pi^+\pi^-\pi^0$	$<$	1.85	$\times 10^{-3}$	CL=90%
Γ_{50}	$\omega p\overline{p}$	$<$	2.9	$\times 10^{-4}$	CL=90%
Γ_{51}	$\Lambda\overline{\Lambda}\pi^0$	$<$	1.2	$\times 10^{-3}$	CL=90%
Γ_{52}	$p\overline{p}2(\pi^+\pi^-)$	$<$	2.6	$\times 10^{-3}$	CL=90%
Γ_{53}	$\eta p\overline{p}$	$<$	5.4	$\times 10^{-4}$	CL=90%
Γ_{54}	$\rho^0 p\overline{p}$	$<$	1.7	$\times 10^{-3}$	CL=90%
Γ_{55}	$p\overline{p}K^+K^-$	$<$	3.2	$\times 10^{-4}$	CL=90%
Γ_{56}	$\phi p\overline{p}$	$<$	1.3	$\times 10^{-4}$	CL=90%
Γ_{57}	$\Lambda\overline{\Lambda}\pi^+\pi^-$	$<$	2.5	$\times 10^{-4}$	CL=90%
Γ_{58}	$\Lambda\overline{p}K^+$	$<$	2.8	$\times 10^{-4}$	CL=90%
Γ_{59}	$\Lambda\overline{p}K^+\pi^+\pi^-$	$<$	6.3	$\times 10^{-4}$	CL=90%
Γ_{60}	$\pi^+\pi^-\pi^0$	not seen			
Γ_{61}	$\rho\pi$	not seen			
Γ_{62}	$\omega\pi^0$	not seen			
Γ_{63}	$\rho\eta$	not seen			
Γ_{64}	$\omega\eta$	not seen			
Γ_{65}	$\rho\eta'$	not seen			
Γ_{66}	$\omega\eta'$	not seen			
Γ_{67}	$\phi\eta'$	not seen			
Γ_{68}	$K^{*0}\overline{K}^0$	not seen			
Γ_{69}	$K^{*+}K^-$	not seen			
Γ_{70}	$b_1\pi$	not seen			

$\psi(3770)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_{11}

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
0.265±0.018 OUR FIT Error includes scale factor of 1.3.					
0.259±0.016 OUR AVERAGE Error includes scale factor of 1.2.					
0.22 ±0.05		[5] ABLIKIM	08D	BES2	$e^+e^- \to$ hadrons
0.277±0.011±0.013		ABLIKIM	07E	BES2	$e^+e^- \to$ hadrons
$0.204\pm0.003^{+0.041}_{-0.027}$	1.427M	[6] BESSON	06	CLEO	$e^+e^- \to$ hadrons
0.276±0.050		SCHINDLER	80	MRK2	e^+e^-
0.18 ±0.06		BACINO	78	DLCO	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.37 ±0.09		[7] RAPIDIS	77	LGW	e^+e^-

[5] 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 $\delta = 0^\circ$.

[6] BESSON 06 measure $\sigma(e^+e^- \to \psi(3770) \to$ hadrons$) = 6.38 \pm 0.08^{+0.41}_{-0.30}$ 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.

[7] See also $\Gamma(e^+e^-)/\Gamma_{\text{total}}$ below.

$\psi(3770)$ BRANCHING RATIOS

$\Gamma(D\overline{D})/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.853±0.032 OUR AVERAGE				
0.849±0.056±0.018	[8] ABLIKIM	08B	BES2	$e^+e^- \to$ non-$D\overline{D}$
0.866±0.050±0.036	[9] ABLIKIM	07K	BES2	$e^+e^- \to$ non-$D\overline{D}$
0.836±0.073±0.042	ABLIKIM	06L	BES2	$e^+e^- \to D\overline{D}$
0.855±0.017±0.058	[10] ABLIKIM	06N	BES2	$e^+e^- \to D\overline{D}$

$\Gamma(D^0\overline{D}^0)/\Gamma_{\text{total}}$ Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.487±0.032 OUR AVERAGE				
0.467±0.047±0.023	ABLIKIM	06L	BES2	$e^+e^- \to D^0\overline{D}^0$
0.499±0.013±0.038	[10] ABLIKIM	06N	BES2	$e^+e^- \to D^0\overline{D}^0$

$\Gamma(D^+D^-)/\Gamma_{\text{total}}$ Γ_3/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.361±0.028 OUR AVERAGE				
0.369±0.037±0.028	ABLIKIM	06L	BES2	$e^+e^- \to D^+D^-$
0.357±0.011±0.034	[10] ABLIKIM	06N	BES2	$e^+e^- \to D^+D^-$

$\Gamma(D^0\overline{D}^0)/\Gamma(D^+D^-)$ Γ_2/Γ_3

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.260±0.021 OUR AVERAGE					
1.39 ±0.31 ±0.12		PAKHLOVA	08	BELL	10.6 $e^+e^- \to D\overline{D}\gamma$
1.78 ±0.33 ±0.24		AUBERT	07BE	BABR	$e^+e^- \to D\overline{D}\gamma$
1.258±0.016±0.014		DOBBS	07	CLEO	$e^+e^- \to D\overline{D}$
1.27 ±0.12 ±0.08		ABLIKIM	06L	BES2	$e^+e^- \to D\overline{D}$
2.43 ±1.50 ±0.43	34	[11] CHISTOV	04	BELL	$B^+ \to \psi(3770)K^+$

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

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

$\Gamma(J/\psi\pi^0\pi^0)/\Gamma_{total}$ Γ_5/Γ

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

$\Gamma(J/\psi\eta)/\Gamma_{total}$ Γ_6/Γ

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

$\Gamma(J/\psi\pi^0)/\Gamma_{total}$ Γ_7/Γ

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

$\Gamma(\gamma\chi_{c0})/\Gamma_{total}$ Γ_8/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
7.3±0.7±0.6		274 ± 27	[12] BRIERE	06	CLEO	$e^+e^- \to \psi(3770) \to \gamma +$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 44	90		[13] COAN	06A	CLEO	$e^+e^- \to \psi(3770) \to \gamma\gamma J/\psi$

$\Gamma(\gamma\chi_{c1})/\Gamma_{total}$ Γ_9/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.9±0.5±0.4		[14] BRIERE	06	CLEO	$e^+e^- \to \psi(3770) \to \gamma +$ hadrons, $\gamma\gamma J/\psi$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.9±1.4±0.6	54 ± 17	[15] BRIERE	06	CLEO	$e^+e^- \to \psi(3770) \to \gamma +$ hadrons
2.8±0.5±0.4	53 ± 10	[13] COAN	06A	CLEO	$e^+e^- \to \psi(3770) \to \gamma\gamma J/\psi$

$\Gamma(\gamma\chi_{c1})/\Gamma(J/\psi\pi^+\pi^-)$ Γ_9/Γ_4

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.49±0.31±0.26	53 ± 10	[16] COAN	06A	CLEO	$e^+e^- \to \psi(3770) \to \gamma\gamma J/\psi$

$\Gamma(\gamma\chi_{c0})/\Gamma(\gamma\chi_{c1})$ Γ_8/Γ_9

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.5±0.6	[17] BRIERE	06	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(\gamma\chi_{c2})/\Gamma_{total}$ Γ_{10}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.9	90	[13] COAN	06A	CLEO	$e^+e^- \to \psi(3770) \to \gamma\gamma J/\psi$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.0	90	[18] BRIERE	06	CLEO	$e^+e^- \to \psi(3770) \to \gamma +$ hadrons

$\Gamma(\gamma\chi_{c0})/\Gamma(\gamma\chi_{c2})$ Γ_8/Γ_{10}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
>8	90	[17] BRIERE	06	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(e^+e^-)/\Gamma_{total}$ Γ_{11}/Γ

VALUE (units 10^{-5})		DOCUMENT ID		TECN	COMMENT
0.97±0.07 OUR FIT	Error includes scale factor of 1.2.				
1.3 ±0.2		RAPIDIS	77	LGW	e^+e^-

$\Gamma(K^0_S K^0_L)/\Gamma_{total}$ Γ_{12}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
< 1.2	90	[19] CRONIN-HEN..	06	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<21	90	[20] ABLIKIM	04F	BES	$e^+e^- \to \psi(3770)$

$\Gamma(2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{13}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<11.2	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<48		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(2(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{14}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<10.6	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<62		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\omega\pi^+\pi^-)/\Gamma_{total}$ Γ_{15}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 6.0	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<55	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(3(\pi^+\pi^-))/\Gamma_{total}$ Γ_{16}/Γ

VALUE (units 10^{-4})		DOCUMENT ID		TECN	COMMENT
<91		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(3(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{17}/Γ

VALUE (units 10^{-4})		DOCUMENT ID		TECN	COMMENT
<137		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\eta\pi^+\pi^-)/\Gamma_{total}$ Γ_{18}/Γ

VALUE (units 10^{-4})	CL%		DOCUMENT ID		TECN	COMMENT
<12.4	90	[21]	HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-3})	CL%		DOCUMENT ID		TECN	COMMENT
<6.9	90	[22,23]	ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\eta 3\pi)/\Gamma_{total}$ Γ_{20}/Γ

VALUE (units 10^{-4})	CL%		DOCUMENT ID		TECN	COMMENT
<13.4	90	[21]	HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(\eta 2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{21}/Γ

VALUE (units 10^{-4})		DOCUMENT ID		TECN	COMMENT
<243	[22,23]	ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\eta' 3\pi)/\Gamma_{total}$ Γ_{22}/Γ

VALUE (units 10^{-4})	CL%		DOCUMENT ID		TECN	COMMENT
<24.4	90	[21]	HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(K^+K^-\pi^+\pi^-)/\Gamma_{total}$ Γ_{23}/Γ

VALUE (units 10^{-4})	CL%		DOCUMENT ID		TECN	COMMENT
< 9.0	90	[21]	HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<48		[22,23]	ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%		DOCUMENT ID		TECN	COMMENT
< 4.1	90	[21]	HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<16		[22,23]	ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\phi\pi^0)/\Gamma_{total}$ Γ_{25}/Γ

VALUE (units 10^{-4})		DOCUMENT ID		TECN	COMMENT
<5	[22,23]	ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\phi\eta)/\Gamma_{total}$ Γ_{26}/Γ

VALUE (units 10^{-4})		DOCUMENT ID		TECN	COMMENT
3.1±0.6±0.3	[25]	ADAMS	06	CLEO	3.773 $e^+e^- \to \phi\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<19	[22,23]	ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(4(\pi^+\pi^-))/\Gamma_{total}$ Γ_{27}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<16.7	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(4(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{28}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<30.6	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\phi f_0(980))/\Gamma_{total}$ Γ_{29}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<4.5	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 23.6	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<111		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<8	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<146	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(\omega K^+K^-)/\Gamma_{total}$ Γ_{33}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 3.4	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<66	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<38	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(K^{*0}K^-\pi^+\pi^0 + \text{c.c.})/\Gamma_{total}$ Γ_{35}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<162	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(K^{*+}K^-\pi^+\pi^- + \text{c.c.})/\Gamma_{total}$ Γ_{36}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<323	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(K^+K^-2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{37}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<10.3	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(K^+K^-2(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{38}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<36.0	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<4.1	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(\rho^0K^+K^-)/\Gamma_{total}$ Γ_{40}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<5.0	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 6.0	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<17		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 7.5	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<24		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(2(K^+K^-)\pi^0)/\Gamma_{total}$ Γ_{43}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 2.9	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<46		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(2(K^+K^-)\pi^+\pi^-)/\Gamma_{total}$ Γ_{44}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<3.2	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<9.7	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(p\bar{p}\pi^0)/\Gamma_{total}$ Γ_{46}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
<12	[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(p\bar{p}\pi^+\pi^-)/\Gamma_{total}$ Γ_{47}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 5.8	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<16		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\Lambda\bar{\Lambda})/\Gamma_{total}$ Γ_{48}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.2	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<4	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<18.5	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<73		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\omega p\bar{p})/\Gamma_{total}$ Γ_{50}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 2.9	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<30	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(\Lambda\bar{\Lambda}\pi^0)/\Gamma_{total}$ Γ_{51}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<12	90	[24] ABLIKIM	07I	BES2	3.77 e^+e^-

$\Gamma(p\bar{p}2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{52}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<2.6	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\eta p\bar{p})/\Gamma_{total}$ Γ_{53}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<5.4	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(\rho^0 p\bar{p})/\Gamma_{total}$ Γ_{54}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<1.7	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

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

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 3.2	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<11		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\phi p\overline{p})/\Gamma_{total}$ Γ_{56}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.3	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<9		[22,23] ABLIKIM	07B	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\Lambda\overline{\Lambda}\pi^+\pi^-)/\Gamma_{total}$ Γ_{57}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
< 2.5	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<39	90	[22,23] ABLIKIM	07F	BES2	$e^+e^- \to \psi(3770)$

$\Gamma(\Lambda\overline{p}K^+)/\Gamma_{total}$ Γ_{58}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<2.8	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

$\Gamma(\Lambda\overline{p}K^+\pi^+\pi^-)/\Gamma_{total}$ Γ_{59}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<6.3	90	[21] HUANG	06A	CLEO	$e^+e^- \to \psi(3770)$

[8] Neglecting interference.
[9] Using $\sigma^{obs} = 7.07 \pm 0.58$ nb and neglecting interference.
[10] From a measurement of $\sigma(e^+e^- \to D\overline{D})$ at $\sqrt{s} = 3773$ MeV, using the $\psi(3770)$ resonance parameters measured by ABLIKIM 06L.
[11] See ADLER 88C for older measurements of this quantity.
[12] Uses $B(\psi(2S) \to \gamma\chi_{c0}) = 9.33 \pm 0.14 \pm 0.61$ % 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.
[13] Using $\Gamma_{ee}(\psi(2S)) = (2.54 \pm 0.03 \pm 0.11)$ keV from ADAM 06 and taking $\sigma(e^+e^- \to D\overline{D})$ from HE 05 for $\sigma(e^+e^- \to \psi(3770))$.
[14] Averages the two measurements from COAN 06A and BRIERE 06.
[15] Uses $B(\psi(2S) \to \gamma\chi_{c1}) = 9.07 \pm 0.11 \pm 0.54$ % 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.
[16] Using $B(\psi(3770) \to J/\psi\pi^+\pi^-) = (1.89 \pm 0.20 \pm 0.20) \times 10^{-3}$ from ADAM 06.
[17] Not independent of other results in BRIERE 06.
[18] Uses $B(\psi(2S) \to \gamma\chi_{c2}) = 9.22 \pm 0.11 \pm 0.46$ % 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.
[19] Using $\sigma(e^+e^- \to \psi(3770) \to \text{hadrons}) = (6.38 \pm 0.08^{+0.41}_{-0.30})$ nb from BESSON 06 and $B(K^0_S \to \pi^+\pi^-) = 0.6895 \pm 0.0014$.
[20] Using $B(K^0_S \to \pi^+\pi^-) = 0.6860 \pm 0.0027$.
[21] Using $\sigma_{tot}(e^+e^- \to \psi(3770)) = 7.9 \pm 0.6$ nb at the resonance.
[22] Assuming that interference effects between resonance and continuum can be neglected.
[23] Using $\sigma^{obs}(e^+e^- \to \psi(3770)) = 7.15 \pm 0.38$ nb.
[24] Using $\sigma^{\text{obs}} = 7.15 \pm 0.27 \pm 0.27$ nb and neglecting interference.
[25] Comparing $\sigma(e^+e^- \to \phi\eta)$ at $\sqrt{s} = 3.773$ GeV and $\sqrt{s} = 3.671$ GeV, and using $\sigma(\psi(3770) \to D\overline{D}) = 6.39 \pm 0.20$ nb.

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