$J/\psi(1S)$

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

$J/\psi(1S)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
3096.916±0.011 OUR AVERAGE					
3096.917±0.010±0.007		AULCHENKO	03	KEDR	$e^+e^- \to$ hadrons
3096.89 ±0.09	502	[1] ARTAMONOV	00	OLYA	$e^+e^- \to$ hadrons
3096.91 ±0.03 ±0.01		[2] ARMSTRONG	93B	E760	$\overline{p}p \to e^+e^-$
3096.95 ±0.1 ±0.3	193	BAGLIN	87	SPEC	$\overline{p}p \to e^+e^- X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3097.5 ±0.3		GRIBUSHIN	96	FMPS	$515\ \pi^-\,\mathrm{Be} \to 2\mu X$
3098.4 ±2.0	38k	LEMOIGNE	82	GOLI	$185\ \pi^-\,\mathrm{Be} \to \gamma\mu^+\mu^- A$
3096.93 ±0.09	502	[3] ZHOLENTZ	80	REDE	e^+e^-
3097.0 ±1		[4] BRANDELIK	79C	DASP	e^+e^-

[1] Reanalysis of ZHOLENTZ 80 using new electron mass (COHEN 87) and radiative corrections (KURAEV 85).
[2] Mass central value and systematic error recalculated by us according to Eq. (16) in ARMSTRONG 93B, using the value for the $\psi(2S)$ mass from AULCHENKO 03.
[3] Superseded by ARTAMONOV 00.
[4] From a simultaneous fit to e^+e^-, $\mu^+\mu^-$ and hadronic channels assuming $\Gamma(e^+e^-) = \Gamma(\mu^+\mu^-)$.

$J/\psi(1S)$ WIDTH

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
92.9± 2.8 OUR AVERAGE	Error includes scale factor of 1.1.				
96.1± 3.2	13k	[5] ADAMS	06A	CLEO	$e^+e^- \to \mu^+\mu^-\gamma$
84.4± 8.9		BAI	95B	BES	e^+e^-
91 ±11 ±6		[6] ARMSTRONG	93B	E760	$\overline{p}p \to e^+e^-$
$85.5^{+6.1}_{-5.8}$		[7] HSUEH	92	RVUE	See Υ mini-review
• • • We do not use the following data for averages, fits, limits, etc. • • •					
94.1± 2.7		[8] ANASHIN	10	KEDR	$3.097\ e^+e^- \to e^+e^-,\ \mu^+\mu^-$
93.7± 3.5	7.8k	[5] AUBERT	04	BABR	$e^+e^- \to \mu^+\mu^-\gamma$

[5] Calculated by us from the reported values of $\Gamma(e^+e^-)\times B(\mu^+\mu^-)$ using $B(e^+e^-) = (5.94 \pm 0.06)\%$ and $B(\mu^+\mu^-) = (5.93 \pm 0.06)\%$.
[6] The initial-state radiation correction reevaluated by ANDREOTTI 07 in its Ref. [4].
[7] Using data from COFFMAN 92, BALDINI-CELIO 75, BOYARSKI 75, ESPOSITO 75B, BRANDELIK 79C.
[8] Assuming $\Gamma(e^+e^-) = \Gamma(\mu^+\mu^-)$ and using $\Gamma(e^+e^-)/\Gamma_{total} = (5.94 \pm 0.06)\%$.

$J/\psi(1S)$ DECAY MODES

	Mode		Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1	hadrons		(87.7 ± 0.5) %	
Γ_2	virtual $\gamma \to$ hadrons		(13.50 ± 0.30) %	
Γ_3	ggg		(64.1 ± 1.0) %	
Γ_4	γgg		(8.8 ± 0.5) %	
Γ_5	e^+e^-		(5.94 ± 0.06) %	
Γ_6	$\mu^+\mu^-$		(5.93 ± 0.06) %	
	Decays involving hadronic resonances			
Γ_7	$\rho\pi$		(1.69 ± 0.15) %	S=2.4
Γ_8	$\rho^0\pi^0$		$(5.6 \pm 0.7) \times 10^{-3}$	
Γ_9	$a_2(1320)\rho$		(1.09 ± 0.22) %	
Γ_{10}	$\omega\pi^+\pi^+\pi^-\pi^-$		$(8.5 \pm 3.4) \times 10^{-3}$	
Γ_{11}	$\omega\pi^+\pi^-\pi^0$		$(4.0 \pm 0.7) \times 10^{-3}$	
Γ_{12}	$\omega\pi^+\pi^-$		$(8.6 \pm 0.7) \times 10^{-3}$	S=1.1
Γ_{13}	$\omega f_2(1270)$		$(4.3 \pm 0.6) \times 10^{-3}$	
Γ_{14}	$K^*(892)^0\overline{K}^*_2(1430)^0$ + c.c.		$(6.0 \pm 0.6) \times 10^{-3}$	
Γ_{15}	$K^*(892)^0\overline{K}_2(1770)^0$ + c.c. $\to$ $K^*(892)^0K^-\pi^+$ + c.c.		$(6.9 \pm 0.9) \times 10^{-4}$	
Γ_{16}	$\omega K^*(892)\overline{K}$ + c.c.		$(6.1 \pm 0.9) \times 10^{-3}$	
Γ_{17}	$K^+\overline{K}^*(892)^-$ + c.c.		$(5.12 \pm 0.30) \times 10^{-3}$	
Γ_{18}	$K^+\overline{K}^*(892)^-$ + c.c. $\to$ $K^+K^-\pi^0$		$(1.97 \pm 0.20) \times 10^{-3}$	
Γ_{19}	$K^+\overline{K}^*(892)^-$ + c.c. $\to$ $K^0K^\pm\pi^\mp$		$(3.0 \pm 0.4) \times 10^{-3}$	
Γ_{20}	$K^0\overline{K}^*(892)^0$ + c.c.		$(4.39 \pm 0.31) \times 10^{-3}$	
Γ_{21}	$K^0\overline{K}^*(892)^0$ + c.c. $\to$ $K^0K^\pm\pi^\mp$		$(3.2 \pm 0.4) \times 10^{-3}$	
Γ_{22}	$K_1(1400)^\pm K^\mp$		$(3.8 \pm 1.4) \times 10^{-3}$	
Γ_{23}	$\overline{K}^*(892)^0K^+\pi^-$ + c.c.		seen	
Γ_{24}	$\omega\pi^0\pi^0$		$(3.4 \pm 0.8) \times 10^{-3}$	
Γ_{25}	$b_1(1235)^\pm\pi^\mp$	[a]	$(3.0 \pm 0.5) \times 10^{-3}$	
Γ_{26}	$\omega K^\pm K^0_S\pi^\mp$	[a]	$(3.4 \pm 0.5) \times 10^{-3}$	
Γ_{27}	$b_1(1235)^0\pi^0$		$(2.3 \pm 0.6) \times 10^{-3}$	
Γ_{28}	$\eta K^\pm K^0_S\pi^\mp$	[a]	$(2.2 \pm 0.4) \times 10^{-3}$	
Γ_{29}	$\phi K^*(892)\overline{K}$ + c.c.		$(2.18 \pm 0.23) \times 10^{-3}$	
Γ_{30}	$\omega K\overline{K}$		$(1.6 \pm 0.5) \times 10^{-4}$	
Γ_{31}	$\omega f_0(1710) \to \omega K\overline{K}$		$(4.8 \pm 1.1) \times 10^{-4}$	
Γ_{32}	$\phi 2(\pi^+\pi^-)$		$(1.66 \pm 0.23) \times 10^{-3}$	
Γ_{33}	$\Delta(1232)^{++}\overline{p}\pi^-$		$(1.6 \pm 0.5) \times 10^{-3}$	
Γ_{34}	$\omega\eta$		$(1.74 \pm 0.20) \times 10^{-3}$	S=1.6
Γ_{35}	$\phi K\overline{K}$		$(1.83 \pm 0.24) \times 10^{-3}$	S=1.5

Γ_{36}	$\quad\phi f_0(1710) \to \phi K\overline{K}$		$(3.6 \pm 0.6) \times 10^{-4}$		
Γ_{37}	$\Delta(1232)^{++}\overline{\Delta}(1232)^{--}$		$(1.10 \pm 0.29) \times 10^{-3}$		
Γ_{38}	$\Sigma(1385)^{-}\overline{\Sigma}(1385)^{+}$ (or c.c.)	[a]	$(1.03 \pm 0.13) \times 10^{-3}$		
Γ_{39}	$\phi f_2'(1525)$		$(8 \pm 4) \times 10^{-4}$		S=2.7
Γ_{40}	$\phi\pi^+\pi^-$		$(8.7 \pm 0.8) \times 10^{-4}$		
Γ_{41}	$\phi\pi^0\pi^0$		$(5.6 \pm 1.6) \times 10^{-4}$		
Γ_{42}	$\phi K^{\pm}K^0_S\pi^{\mp}$	[a]	$(7.2 \pm 0.8) \times 10^{-4}$		
Γ_{43}	$\omega f_1(1420)$		$(6.8 \pm 2.4) \times 10^{-4}$		
Γ_{44}	$\phi\eta$		$(7.5 \pm 0.8) \times 10^{-4}$		S=1.5
Γ_{45}	$\Xi^0\overline{\Xi}^0$		$(1.20 \pm 0.24) \times 10^{-3}$		
Γ_{46}	$\Xi(1530)^-\overline{\Xi}^+$		$(5.9 \pm 1.5) \times 10^{-4}$		
Γ_{47}	$pK^-\overline{\Sigma}(1385)^0$		$(5.1 \pm 3.2) \times 10^{-4}$		
Γ_{48}	$\omega\pi^0$		$(4.5 \pm 0.5) \times 10^{-4}$		S=1.4
Γ_{49}	$\phi\eta'(958)$		$(4.0 \pm 0.7) \times 10^{-4}$		S=2.1
Γ_{50}	$\phi f_0(980)$		$(3.2 \pm 0.9) \times 10^{-4}$		S=1.9
Γ_{51}	$\quad\phi f_0(980) \to \phi\pi^+\pi^-$		$(2.2 \pm 0.4) \times 10^{-4}$		
Γ_{52}	$\quad\phi f_0(980) \to \phi\pi^0\pi^0$		$(1.7 \pm 0.7) \times 10^{-4}$		
Γ_{53}	$\Xi(1530)^0\overline{\Xi}^0$		$(3.2 \pm 1.4) \times 10^{-4}$		
Γ_{54}	$\Sigma(1385)^-\overline{\Sigma}^+$ (or c.c.)	[a]	$(3.1 \pm 0.5) \times 10^{-4}$		
Γ_{55}	$\phi f_1(1285)$		$(2.6 \pm 0.5) \times 10^{-4}$		S=1.1
Γ_{56}	$\eta\pi^+\pi^-$		$(4.0 \pm 1.7) \times 10^{-4}$		
Γ_{57}	$\quad\rho\eta$		$(1.93 \pm 0.23) \times 10^{-4}$		
Γ_{58}	$\omega\eta'(958)$		$(1.82 \pm 0.21) \times 10^{-4}$		
Γ_{59}	$\omega f_0(980)$		$(1.4 \pm 0.5) \times 10^{-4}$		
Γ_{60}	$\rho\eta'(958)$		$(1.05 \pm 0.18) \times 10^{-4}$		
Γ_{61}	$a_2(1320)^{\pm}\pi^{\mp}$	[a]	$< 4.3 \times 10^{-3}$		CL=90%
Γ_{62}	$K\overline{K}^*_2(1430)+$ c.c.		$< 4.0 \times 10^{-3}$		CL=90%
Γ_{63}	$K_1(1270)^{\pm}K^{\mp}$		$< 3.0 \times 10^{-3}$		CL=90%
Γ_{64}	$K^*_2(1430)^0\overline{K}^*_2(1430)^0$		$< 2.9 \times 10^{-3}$		CL=90%
Γ_{65}	$K^*(892)^0\overline{K}^*(892)^0$		$(2.3 \pm 0.7) \times 10^{-4}$		
Γ_{66}	$\phi f_2(1270)$		$(7.2 \pm 1.3) \times 10^{-4}$		
Γ_{67}	$\phi\eta(1405) \to \phi\eta\pi\pi$		$< 2.5 \times 10^{-4}$		CL=90%
Γ_{68}	$\omega f_2'(1525)$		$< 2.2 \times 10^{-4}$		CL=90%
Γ_{69}	$\Sigma(1385)^0\overline{\Lambda}$		$< 2 \times 10^{-4}$		CL=90%
Γ_{70}	$\Delta(1232)^+\overline{p}$		$< 1 \times 10^{-4}$		CL=90%
Γ_{71}	$\Theta(1540)\overline{\Theta}(1540) \to K^0_S pK^-\overline{n}+$ c.c.		$< 1.1 \times 10^{-5}$		CL=90%
Γ_{72}	$\Theta(1540)K^-\overline{n} \to K^0_S pK^-\overline{n}$		$< 2.1 \times 10^{-5}$		CL=90%
Γ_{73}	$\Theta(1540)K^0_S\overline{p} \to K^0_S\overline{p}K^+n$		$< 1.6 \times 10^{-5}$		CL=90%
Γ_{74}	$\overline{\Theta}(1540)K^+n \to K^0_S\overline{p}K^+n$		$< 5.6 \times 10^{-5}$		CL=90%
Γ_{75}	$\overline{\Theta}(1540)K^0_S p \to K^0_S pK^-\overline{n}$		$< 1.1 \times 10^{-5}$		CL=90%
Γ_{76}	$\Sigma^0\overline{\Lambda}$		$< 9 \times 10^{-5}$		CL=90%
Γ_{77}	$\phi\pi^0$		$< 6.4 \times 10^{-6}$		CL=90%

Decays into stable hadrons

Γ_{78}	$2(\pi^+\pi^-)\pi^0$		(5.5 ± 0.4) %	
Γ_{79}	$3(\pi^+\pi^-)\pi^0$		(2.9 ± 0.6) %	
Γ_{80}	$\pi^+\pi^-\pi^0$		(2.07 ± 0.12) %	S=1.6
Γ_{81}	$\pi^+\pi^-\pi^0 K^+ K^-$		(1.94 ± 0.15) %	
Γ_{82}	$4(\pi^+\pi^-)\pi^0$		$(9.0 \pm 3.0) \times 10^{-3}$	
Γ_{83}	$\pi^+\pi^- K^+ K^-$		$(6.6 \pm 0.5) \times 10^{-3}$	
Γ_{84}	$\pi^+\pi^- K^+ K^- \eta$		$(1.84 \pm 0.28) \times 10^{-3}$	
Γ_{85}	$\pi^0\pi^0 K^+ K^-$		$(2.45 \pm 0.31) \times 10^{-3}$	
Γ_{86}	$\eta\phi f_0(980) \rightarrow \eta\phi\pi^+\pi^-$		$(3.2 \pm 1.0) \times 10^{-4}$	
Γ_{87}	$K\overline{K}\pi$		$(6.1 \pm 1.0) \times 10^{-3}$	
Γ_{88}	$2(\pi^+\pi^-)$		$(3.55 \pm 0.23) \times 10^{-3}$	
Γ_{89}	$3(\pi^+\pi^-)$		$(4.3 \pm 0.4) \times 10^{-3}$	
Γ_{90}	$2(\pi^+\pi^-\pi^0)$		(1.61 ± 0.21) %	
Γ_{91}	$2(\pi^+\pi^-)\eta$		$(2.29 \pm 0.24) \times 10^{-3}$	
Γ_{92}	$3(\pi^+\pi^-)\eta$		$(7.2 \pm 1.5) \times 10^{-4}$	
Γ_{93}	$p\overline{p}$		$(2.17 \pm 0.07) \times 10^{-3}$	
Γ_{94}	$p\overline{p}\pi^0$		$(1.19 \pm 0.08) \times 10^{-3}$	S=1.1
Γ_{95}	$p\overline{p}\pi^+\pi^-$		$(6.0 \pm 0.5) \times 10^{-3}$	S=1.3
Γ_{96}	$p\overline{p}\pi^+\pi^-\pi^0$	[*b*]	$(2.3 \pm 0.9) \times 10^{-3}$	S=1.9
Γ_{97}	$p\overline{p}\eta$		$(2.00 \pm 0.12) \times 10^{-3}$	
Γ_{98}	$p\overline{p}\rho$		$< 3.1 \times 10^{-4}$	CL=90%
Γ_{99}	$p\overline{p}\omega$		$(1.10 \pm 0.15) \times 10^{-3}$	S=1.3
Γ_{100}	$p\overline{p}\eta'(958)$		$(2.1 \pm 0.4) \times 10^{-4}$	
Γ_{101}	$p\overline{p}\phi$		$(4.5 \pm 1.5) \times 10^{-5}$	
Γ_{102}	$n\overline{n}$		$(2.2 \pm 0.4) \times 10^{-3}$	
Γ_{103}	$n\overline{n}\pi^+\pi^-$		$(4 \pm 4) \times 10^{-3}$	
Γ_{104}	$\Sigma^+\overline{\Sigma}^-$		$(1.50 \pm 0.24) \times 10^{-3}$	
Γ_{105}	$\Sigma^0\overline{\Sigma}^0$		$(1.29 \pm 0.09) \times 10^{-3}$	
Γ_{106}	$2(\pi^+\pi^-)K^+K^-$		$(5.0 \pm 0.5) \times 10^{-3}$	
Γ_{107}	$p\overline{n}\pi^-$		$(2.12 \pm 0.09) \times 10^{-3}$	
Γ_{108}	$n N(1440)$		seen	
Γ_{109}	$n N(1520)$		seen	
Γ_{110}	$n N(1535)$		seen	
Γ_{111}	$\Xi^-\overline{\Xi}^+$		$(8.5 \pm 1.6) \times 10^{-4}$	S=1.5
Γ_{112}	$\Lambda\overline{\Lambda}$		$(1.61 \pm 0.15) \times 10^{-3}$	S=1.9
Γ_{113}	$\Lambda\overline{\Sigma}^-\pi^+$ (or c.c.)	[*a*]	$(8.3 \pm 0.7) \times 10^{-4}$	S=1.2
Γ_{114}	$pK^-\overline{\Lambda}$		$(8.9 \pm 1.6) \times 10^{-4}$	
Γ_{115}	$2(K^+K^-)$		$(7.6 \pm 0.9) \times 10^{-4}$	
Γ_{116}	$pK^-\overline{\Sigma}^0$		$(2.9 \pm 0.8) \times 10^{-4}$	
Γ_{117}	K^+K^-		$(2.37 \pm 0.31) \times 10^{-4}$	
Γ_{118}	$K^0_S K^0_L$		$(1.46 \pm 0.26) \times 10^{-4}$	S=2.7
Γ_{119}	$\Lambda\overline{\Lambda}\eta$		$(2.6 \pm 0.7) \times 10^{-4}$	
Γ_{120}	$\Lambda\overline{\Lambda}\pi^0$		$< 6.4 \times 10^{-5}$	CL=90%

Γ_{121}	$\overline{\Lambda} n K^0_S$ + c.c.		$(6.5 \pm 1.1) \times 10^{-4}$	
Γ_{122}	$\pi^+\pi^-$		$(1.47 \pm 0.23) \times 10^{-4}$	
Γ_{123}	$\Lambda\overline{\Sigma}$ + c.c.		$< 1.5 \times 10^{-4}$	CL=90%
Γ_{124}	$K^0_S K^0_S$		$< 1 \times 10^{-6}$	CL=95%

Radiative decays

Γ_{125}	3γ		$(1.2 \pm 0.4) \times 10^{-5}$	
Γ_{126}	4γ		$< 9 \times 10^{-6}$	CL=90%
Γ_{127}	5γ		$< 1.5 \times 10^{-5}$	CL=90%
Γ_{128}	$\gamma\eta_c(1S)$		(1.7 ± 0.4) %	S=1.6
Γ_{129}	$\gamma\eta_c(1S) \to 3\gamma$		$(1.2 {}^{+2.7}_{-1.1}) \times 10^{-6}$	
Γ_{130}	$\gamma\pi^+\pi^- 2\pi^0$		$(8.3 \pm 3.1) \times 10^{-3}$	
Γ_{131}	$\gamma\eta\pi\pi$		$(6.1 \pm 1.0) \times 10^{-3}$	
Γ_{132}	$\gamma\eta_2(1870) \to \gamma\eta\pi^+\pi^-$		$(6.2 \pm 2.4) \times 10^{-4}$	
Γ_{133}	$\gamma\eta(1405/1475) \to \gamma K\overline{K}\pi$	[c]	$(2.8 \pm 0.6) \times 10^{-3}$	S=1.6
Γ_{134}	$\gamma\eta(1405/1475) \to \gamma\gamma\rho^0$		$(7.8 \pm 2.0) \times 10^{-5}$	S=1.8
Γ_{135}	$\gamma\eta(1405/1475) \to \gamma\eta\pi^+\pi^-$		$(3.0 \pm 0.5) \times 10^{-4}$	
Γ_{136}	$\gamma\eta(1405/1475) \to \gamma\gamma\phi$		$< 8.2 \times 10^{-5}$	CL=95%
Γ_{137}	$\gamma\rho\rho$		$(4.5 \pm 0.8) \times 10^{-3}$	
Γ_{138}	$\gamma\rho\omega$		$< 5.4 \times 10^{-4}$	CL=90%
Γ_{139}	$\gamma\rho\phi$		$< 8.8 \times 10^{-5}$	CL=90%
Γ_{140}	$\gamma\eta'(958)$		$(5.28 \pm 0.15) \times 10^{-3}$	
Γ_{141}	$\gamma 2\pi^+ 2\pi^-$		$(2.8 \pm 0.5) \times 10^{-3}$	S=1.9
Γ_{142}	$\gamma f_2(1270) f_2(1270)$		$(9.5 \pm 1.7) \times 10^{-4}$	
Γ_{143}	$\gamma f_2(1270) f_2(1270)$ (non resonant)		$(8.2 \pm 1.9) \times 10^{-4}$	
Γ_{144}	$\gamma K^+ K^- \pi^+\pi^-$		$(2.1 \pm 0.6) \times 10^{-3}$	
Γ_{145}	$\gamma f_4(2050)$		$(2.7 \pm 0.7) \times 10^{-3}$	
Γ_{146}	$\gamma\omega\omega$		$(1.61 \pm 0.33) \times 10^{-3}$	
Γ_{147}	$\gamma\eta(1405/1475) \to \gamma\rho^0\rho^0$		$(1.7 \pm 0.4) \times 10^{-3}$	S=1.3
Γ_{148}	$\gamma f_2(1270)$		$(1.43 \pm 0.11) \times 10^{-3}$	
Γ_{149}	$\gamma f_0(1710) \to \gamma K\overline{K}$		$(8.5 {}^{+1.2}_{-0.9}) \times 10^{-4}$	S=1.2
Γ_{150}	$\gamma f_0(1710) \to \gamma\pi\pi$		$(4.0 \pm 1.0) \times 10^{-4}$	
Γ_{151}	$\gamma f_0(1710) \to \gamma\omega\omega$		$(3.1 \pm 1.0) \times 10^{-4}$	
Γ_{152}	$\gamma\eta$		$(1.104 \pm 0.034) \times 10^{-3}$	
Γ_{153}	$\gamma f_1(1420) \to \gamma K\overline{K}\pi$		$(7.9 \pm 1.3) \times 10^{-4}$	
Γ_{154}	$\gamma f_1(1285)$		$(6.1 \pm 0.8) \times 10^{-4}$	
Γ_{155}	$\gamma f_1(1510) \to \gamma\eta\pi^+\pi^-$		$(4.5 \pm 1.2) \times 10^{-4}$	
Γ_{156}	$\gamma f'_2(1525)$		$(4.5 {}^{+0.7}_{-0.4}) \times 10^{-4}$	
Γ_{157}	$\gamma f_2(1640) \to \gamma\omega\omega$		$(2.8 \pm 1.8) \times 10^{-4}$	
Γ_{158}	$\gamma f_2(1910) \to \gamma\omega\omega$		$(2.0 \pm 1.4) \times 10^{-4}$	
Γ_{159}	$\gamma f_2(1950) \to \gamma K^*(892)\overline{K}^*(892)$		$(7.0 \pm 2.2) \times 10^{-4}$	

Γ_{160}	$\gamma K^*(892)\overline{K}^*(892)$		$(4.0 \pm 1.3) \times 10^{-3}$		
Γ_{161}	$\gamma\phi\phi$		$(4.0 \pm 1.2) \times 10^{-4}$		S=2.1
Γ_{162}	$\gamma p\overline{p}$		$(3.8 \pm 1.0) \times 10^{-4}$		
Γ_{163}	$\gamma\eta(2225)$		$(3.3 \pm 0.5) \times 10^{-4}$		
Γ_{164}	$\gamma\eta(1760) \to \gamma\rho^0\rho^0$		$(1.3 \pm 0.9) \times 10^{-4}$		
Γ_{165}	$\gamma\eta(1760) \to \gamma\omega\omega$		$(1.98 \pm 0.33) \times 10^{-3}$		
Γ_{166}	$\gamma X(1835)$		$(2.2 \pm 0.6) \times 10^{-4}$		
Γ_{167}	$\gamma(K\overline{K}\pi)$ $[J^{PC} = 0^{-+}]$		$(7 \pm 4) \times 10^{-4}$		S=2.1
Γ_{168}	$\gamma\pi^0$		$(3.49 {}^{+0.33}_{-0.30}) \times 10^{-5}$		
Γ_{169}	$\gamma p\overline{p}\pi^+\pi^-$		$< 7.9 \times 10^{-4}$		CL=90%
Γ_{170}	$\gamma\Lambda\overline{\Lambda}$		$< 1.3 \times 10^{-4}$		CL=90%
Γ_{171}	$\gamma f_0(2200)$				
Γ_{172}	$\gamma f_J(2220)$		$> 2.50 \times 10^{-3}$		CL=99.9%
Γ_{173}	$\gamma f_J(2220) \to \gamma\pi\pi$		$(8 \pm 4) \times 10^{-5}$		
Γ_{174}	$\gamma f_J(2220) \to \gamma K\overline{K}$		$(8.1 \pm 3.0) \times 10^{-5}$		
Γ_{175}	$\gamma f_J(2220) \to \gamma p\overline{p}$		$(1.5 \pm 0.8) \times 10^{-5}$		
Γ_{176}	$\gamma f_0(1500)$		$>(5.7 \pm 0.8) \times 10^{-4}$		
Γ_{177}	γe^+e^-		$(8.8 \pm 1.4) \times 10^{-3}$		

Weak decays

Γ_{178}	$D^- e^+\nu_e$ + c.c.		$< 1.2 \times 10^{-5}$	CL=90%
Γ_{179}	$\overline{D}^0 e^+e^-$ + c.c.		$< 1.1 \times 10^{-5}$	CL=90%
Γ_{180}	$D_s^- e^+\nu_e$ + c.c.		$< 3.6 \times 10^{-5}$	CL=90%
Γ_{181}	$D^-\pi^+$ + c.c.		$< 7.5 \times 10^{-5}$	CL=90%
Γ_{182}	$\overline{D}^0\overline{K}^0$ + c.c.		$< 1.7 \times 10^{-4}$	CL=90%
Γ_{183}	$D_s^-\pi^+$ + c.c.		$< 1.3 \times 10^{-4}$	CL=90%

Charge conjugation (C), Parity (P), Lepton Family number (LF) violating modes

Γ_{184}	$\gamma\gamma$	C	$< 5 \times 10^{-6}$	CL=90%
Γ_{185}	$e^\pm\mu^\mp$	LF	$< 1.1 \times 10^{-6}$	CL=90%
Γ_{186}	$e^\pm\tau^\mp$	LF	$< 8.3 \times 10^{-6}$	CL=90%
Γ_{187}	$\mu^\pm\tau^\mp$	LF	$< 2.0 \times 10^{-6}$	CL=90%

Other decays

Γ_{188}	invisible		$< 7 \times 10^{-4}$	CL=90%

[*a*] The value is for the sum of the charge states or particle/antiparticle states indicated.

[*b*] Includes $p\overline{p}\pi^+\pi^-\gamma$ and excludes $p\overline{p}\eta$, $p\overline{p}\omega$, $p\overline{p}\eta'$.

[*c*] See the "Note on the $\eta(1405)$" in the $\eta(1405)$ Particle Listings.

$J/\psi(1S)$ PARTIAL WIDTHS

$\Gamma(\text{hadrons})$ Γ_1

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
74.1 ± 8.1	BAI	95B	BES	e^+e^-
59 ± 24	BALDINI-...	75	FRAG	e^+e^-
59 ± 14	BOYARSKI	75	MRK1	e^+e^-
50 ± 25	ESPOSITO	75B	FRAM	e^+e^-

$\Gamma(e^+e^-)$ Γ_5

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
$5.55 \pm 0.14 \pm 0.02$ OUR EVALUATION					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
5.71 ± 0.16	13k	[9] ADAMS	06A	CLEO	$e^+e^- \rightarrow \mu^+\mu^-\gamma$
5.57 ± 0.19	7.8k	[9] AUBERT	04	BABR	$e^+e^- \rightarrow \mu^+\mu^-\gamma$
5.14 ± 0.39		BAI	95B	BES	e^+e^-
$5.36^{+0.29}_{-0.28}$		[10] HSUEH	92	RVUE	See Υ mini-review
4.72 ± 0.35		ALEXANDER	89	RVUE	See Υ mini-review
4.4 ± 0.6		[10] BRANDELIK	79C	DASP	e^+e^-
4.6 ± 0.8		[11] BALDINI-...	75	FRAG	e^+e^-
4.8 ± 0.6		BOYARSKI	75	MRK1	e^+e^-
4.6 ± 1.0		ESPOSITO	75B	FRAM	e^+e^-

[9] Calculated by us from the reported values of $\Gamma(e^+e^-)\times B(\mu^+\mu^-)$ using $B(\mu^+\mu^-) = (5.93 \pm 0.06)\%$.

[10] From a simultaneous fit to e^+e^-, $\mu^+\mu^-$, and hadronic channels assuming $\Gamma(e^+e^-) = \Gamma(\mu^+\mu^-)$.

[11] Assuming equal partial widths for e^+e^- and $\mu^+\mu^-$.

$\Gamma(\mu^+\mu^-)$ Γ_6

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5.13 ± 0.52	BAI	95B	BES	e^+e^-
4.8 ± 0.6	BOYARSKI	75	MRK1	e^+e^-
5 ± 1	ESPOSITO	75B	FRAM	e^+e^-

$\Gamma(\gamma\gamma)$ Γ_{184}

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<5.4	90	BRANDELIK	79C	DASP	e^+e^-

$J/\psi(1S)$ $\Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$

This combination of a partial width with the partial width into e^+e^- and with the total width is obtained from the integrated cross section into channel_I in the e^+e^- annihilation.

$\Gamma(\text{hadrons}) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_1\Gamma_5/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4 $\pm$0.8	[12] BALDINI-...	75	FRAG	e^+e^-
3.9$\pm$0.8	[12] ESPOSITO	75B	FRAM	e^+e^-

[12] Data redundant with branching ratios or partial widths above.

$\Gamma(e^+e^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_5\Gamma_5/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
332.3$\pm$ 6.4$\pm$4.8	ANASHIN	10	KEDR	3.097 $e^+e^- \rightarrow e^+e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
350 $\pm$ 20	BRANDELIK	79C	DASP	e^+e^-
320 $\pm$ 70	[13] BALDINI-...	75	FRAG	e^+e^-
340 $\pm$ 90	[13] ESPOSITO	75B	FRAM	e^+e^-
360 $\pm$100	[13] FORD	75	SPEC	e^+e^-

[13] Data redundant with branching ratios or partial widths above.

$\Gamma(\mu^+\mu^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_6\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
334 $\pm$ 5 OUR AVERAGE					
331.8$\pm$ 5.2$\pm$6.3		ANASHIN	10	KEDR	3.097 $e^+e^- \rightarrow \mu^+\mu^-$
338.4$\pm$ 5.8$\pm$7.1	13k	ADAMS	06A	CLEO	$e^+e^- \rightarrow \mu^+\mu^-\gamma$
330.1$\pm$ 7.7$\pm$7.3	7.8k	AUBERT	04	BABR	$e^+e^- \rightarrow \mu^+\mu^-\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
510 $\pm$90		DASP	75	DASP	e^+e^-
380 $\pm$50		[14] ESPOSITO	75B	FRAM	e^+e^-

[14] Data redundant with branching ratios or partial widths above.

$\Gamma(\omega\pi^+\pi^-\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_{11}\Gamma_5/\Gamma$

VALUE (10^{-2} keV)	EVTS	DOCUMENT ID		TECN	COMMENT
2.2$\pm$0.3$\pm$0.2	170	AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow \omega\pi^+\pi^-\pi^0\gamma$

$\Gamma(\omega\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_{12}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
53.6$\pm$5.0$\pm$0.4	788	[15] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow \omega\pi^+\pi^-\gamma$

[15] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow \omega\pi^+\pi^-) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] \times [B(\omega(782) \rightarrow \pi^+\pi^-\pi^0)] = 47.8 \pm 3.1 \pm 3.2$ eV which we divide by our best value $B(\omega(782) \rightarrow \pi^+\pi^-\pi^0) = (89.2 \pm 0.7) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma\big(K^*(892)^0\overline{K}_2^*(1430)^0 + \text{c.c.}\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{14}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
33±4±1	317 ± 23	[16,17] AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma$

[16] Dividing by 2/3 to take into account that B($K^{*0} \rightarrow K^+\pi^-$) = 2/3.

[17] AUBERT 07AK reports [$\Gamma\big(J/\psi(1S) \rightarrow K^*(892)^0\overline{K}_2^*(1430)^0 + \text{c.c.}\big) \times \Gamma\big(J/\psi(1S) \rightarrow e^+e^-\big)/\Gamma_{\text{total}}$] × [B($K_2^*(1430) \rightarrow K\pi$)] = 16.4 ± 1.1 ± 1.4 eV which we divide by our best value B($K_2^*(1430) \rightarrow K\pi$) = (49.9 ± 1.2) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma\big(K^*(892)^0\overline{K}_2(1770)^0 + \text{c.c.} \rightarrow K^*(892)^0K^-\pi^+ + \text{c.c.}\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{15}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
3.8±0.4±0.3	110 ± 14	[18] AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma$

[18] Dividing by 2/3 to take into account that B($K^{*0} \rightarrow K^+\pi^-$) = 2/3.

$\Gamma\big(K^+\overline{K}^*(892)^- + \text{c.c.}\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{17}\Gamma_5/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
29.0±1.7±1.3	AUBERT	08S	BABR	10.6 $e^+e^- \rightarrow K^+K^*(892)^-\gamma$

$\Gamma\big(K^+\overline{K}^*(892)^- + \text{c.c.} \rightarrow K^+K^-\pi^0\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{18}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
10.96±0.85±0.70	155	AUBERT	08S	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^0\gamma$

$\Gamma\big(K^+\overline{K}^*(892)^- + \text{c.c.} \rightarrow K^0K^\pm\pi^\mp\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{19}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
16.76±1.70±1.00	89	AUBERT	08S	BABR	10.6 $e^+e^- \rightarrow K_S^0K^\pm\pi^\mp\gamma$

$\Gamma\big(K^0\overline{K}^*(892)^0 + \text{c.c.}\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{20}\Gamma_5/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
26.6±2.5±1.5	AUBERT	08S	BABR	10.6 $e^+e^- \rightarrow K^0\overline{K}^*(892)^0\gamma$

$\Gamma\big(K^0\overline{K}^*(892)^0 + \text{c.c.} \rightarrow K^0K^\pm\pi^\mp\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{21}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
17.70±1.70±1.00	94	AUBERT	08S	BABR	10.6 $e^+e^- \rightarrow K_S^0K^\pm\pi^\mp\gamma$

$\Gamma\big(\omega K\overline{K}\big) \times \Gamma\big(e^+e^-\big)/\Gamma_{\text{total}}$ $\Gamma_{30}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
3.70±1.98±0.03	24	[19] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow \omega K^+K^-\gamma$

[19] AUBERT 07AU reports [$\Gamma\big(J/\psi(1S) \rightarrow \omega K\overline{K}\big) \times \Gamma\big(J/\psi(1S) \rightarrow e^+e^-\big)/\Gamma_{\text{total}}$] × [B($\omega(782) \rightarrow \pi^+\pi^-\pi^0$)] = 3.3 ± 1.3 ± 1.2 eV which we divide by our best value B($\omega(782) \rightarrow \pi^+\pi^-\pi^0$) = (89.2 ± 0.7) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi 2(\pi^+\pi^-)) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{32}\Gamma_5/\Gamma$

VALUE (10^{-2} keV)	EVTS	DOCUMENT ID		TECN	COMMENT
0.96±0.19±0.01	35	[20] AUBERT	06D	BABR	$10.6\ e^+e^- \to \phi 2(\pi^+\pi^-)\gamma$

[20] AUBERT 06D reports $[\Gamma(J/\psi(1S) \to \phi 2(\pi^+\pi^-)) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)] = (0.47 \pm 0.09 \pm 0.03) \times 10^{-2}$ keV which we divide by our best value $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{40}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
4.8 ±0.4 OUR AVERAGE					
4.52±0.48±0.04	254±23	[21] SHEN	09	BELL	$10.6\ e^+e^- \to K^+K^-\pi^+\pi^-\gamma$
5.33±0.71±0.05	103	[22] AUBERT,BE	06D	BABR	$10.6\ e^+e^- \to K^+K^-\pi^+\pi^-\gamma$

[21] SHEN 09 reports $4.50 \pm 0.41 \pm 0.26$ eV from a measurement of $[\Gamma(J/\psi(1S) \to \phi\pi^+\pi^-) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)]$ assuming $B(\phi(1020) \to K^+K^-) = (49.2 \pm 0.6) \times 10^{-2}$, which we rescale to our best value $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[22] AUBERT,BE 06D reports $[\Gamma(J/\psi(1S) \to \phi\pi^+\pi^-) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)] = 2.61 \pm 0.30 \pm 0.18$ eV which we divide by our best value $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{41}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
3.15±0.88±0.03	23	[23] AUBERT,BE	06D	BABR	$10.6\ e^+e^- \to K^+K^-\pi^0\pi^0\gamma$

[23] AUBERT,BE 06D reports $[\Gamma(J/\psi(1S) \to \phi\pi^0\pi^0) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}] \times [B(\phi(1020) \to K^+K^-)] = 1.54 \pm 0.40 \pm 0.16$ eV which we divide by our best value $B(\phi(1020) \to K^+K^-) = (48.9 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi\eta) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{44}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
6.1±2.7±0.4	6	[24] AUBERT	07AU	BABR	$10.6\ e^+e^- \to \phi\eta\gamma$

[24] AUBERT 07AU quotes $\Gamma^{J/\psi}_{ee} \cdot B(J/\psi \to \phi\eta) \cdot B(\phi \to K^+K^-) \cdot B(\eta \to 3\pi) = 0.84 \pm 0.37 \pm 0.05$ eV.

$\Gamma(\phi f_0(980) \to \phi\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{51}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
1.21±0.23 OUR AVERAGE					Error includes scale factor of 1.2.
1.48±0.27±0.09	60±11	[25] SHEN	09	BELL	$10.6\ e^+e^- \to K^+K^-\pi^+\pi^-\gamma$
1.02±0.24±0.01	20 ± 5	[26] AUBERT	07AK	BABR	$10.6\ e^+e^- \to \pi^+\pi^-K^+K^-\gamma$

[25] Multiplied by 2/3 to take into account the $\phi\pi^+\pi^-$ mode only. Using B($\phi \to K^+K^-$) = (49.2 ± 0.6)%.

[26] AUBERT 07AK reports [$\Gamma(J/\psi(1S) \to \phi f_0(980) \to \phi\pi^+\pi^-) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$] × [B($\phi(1020) \to K^+K^-$)] = 0.50 ± 0.11 ± 0.04 eV which we divide by our best value B($\phi(1020) \to K^+K^-$) = (48.9 ± 0.5) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi f_0(980) \to \phi\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{52}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
0.96±0.40±0.01	7.0 ± 2.8	[27] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^0\pi^0K^+K^-\gamma$

[27] AUBERT 07AK reports [$\Gamma(J/\psi(1S) \to \phi f_0(980) \to \phi\pi^0\pi^0) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$] × [B($\phi(1020) \to K^+K^-$)] = 0.47 ± 0.19 ± 0.05 eV which we divide by our best value B($\phi(1020) \to K^+K^-$) = (48.9 ± 0.5) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\eta\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{56}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
2.24±0.98±0.03	9	[28] AUBERT	07AU	BABR	10.6 $e^+e^- \to \eta\pi^+\pi^-\gamma$

[28] AUBERT 07AU reports [$\Gamma(J/\psi(1S) \to \eta\pi^+\pi^-) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$] × [B($\eta \to \pi^+\pi^-\pi^0$)] = 0.51 ± 0.22 ± 0.03 eV which we divide by our best value B($\eta \to \pi^+\pi^-\pi^0$) = (22.74 ± 0.28) × 10^{-2}. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^*(892)^0\overline{K}^*(892)^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{65}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
1.28±0.40±0.11	25 ± 8	[29] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^+\pi^-K^+K^-\gamma$

[29] Dividing by $(2/3)^2$ to take twice into account that B($K^{*0} \to K^+\pi^-$) = 2/3.

$\Gamma(\phi f_2(1270)) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{66}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
4.0±0.7±0.1	44 ± 7	[30,31] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^+\pi^-K^+K^-\gamma$

[30] Using B($\phi \to (K+K)^-$) = (49.3 ± 0.6)%.

[31] AUBERT 07AK reports [$\Gamma(J/\psi(1S) \to \phi f_2(1270)) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$] × [B($f_2(1270) \to \pi\pi$)] = 3.41 ± 0.55 ± 0.28 eV which we divide by our best value B($f_2(1270) \to \pi\pi$) = $(84.8^{+2.4}_{-1.2}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(2(\pi^+\pi^-)\pi^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{78}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
303± 5±18	4990	AUBERT	07AU	BABR	10.6 $e^+e^- \to 2(\pi^+\pi^-)\pi^0\gamma$

$\Gamma(\pi^+\pi^-\pi^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{80}\Gamma_5/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.122±0.005±0.008	AUBERT,B	04N	BABR	10.6 $e^+e^- \to \pi^+\pi^-\pi^0\gamma$

$\Gamma(\pi^+\pi^-\pi^0K^+K^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{81}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
107.0±4.3±6.4	768	AUBERT	07AU	BABR	10.6 $e^+e^- \to K^+K^-\pi^+\pi^-\pi^0\gamma$

$\Gamma(\pi^+\pi^-K^+K^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{83}\Gamma_5/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
36.3±1.3±2.1	1586 ± 58	AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
33.6±2.7±2.7	233	[32] AUBERT	05D	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$

[32] Superseded by AUBERT 07AK.

$\Gamma(\pi^+\pi^-K^+K^-\eta) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{84}\Gamma_5/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
25.9±3.9±0.1	73	[33] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\eta\gamma$

[33] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^-K^+K^-\eta) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{total}] \times [B(\eta \rightarrow 2\gamma)] = 10.2 \pm 1.3 \pm 0.8$ eV which we divide by our best value $B(\eta \rightarrow 2\gamma) = (39.31 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\pi^0\pi^0K^+K^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{85}\Gamma_5/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
13.6±1.1±1.3	203 ± 16	AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^0\pi^0K^+K^-\gamma$

$\Gamma(2(\pi^+\pi^-)) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{88}\Gamma_5/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
19.5±1.4±1.3	270	AUBERT	05D	BABR	10.6 $e^+e^- \rightarrow 2(\pi^+\pi^-)\gamma$

$\Gamma(3(\pi^+\pi^-)) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{89}\Gamma_5/\Gamma$

VALUE (10^{-2} keV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.37±0.16±0.14	496	AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow 3(\pi^+\pi^-)\gamma$

$\Gamma(2(\pi^+\pi^-\pi^0)) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{90}\Gamma_5/\Gamma$

VALUE (10^{-2} keV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
8.9±0.5±1.0	761	AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow 2(\pi^+\pi^-\pi^0)\gamma$

$\Gamma(2(\pi^+\pi^-)\eta) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{91}\Gamma_5/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
13.1±2.4±0.1	85	[34] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow 2(\pi^+\pi^-)\eta\gamma$

[34] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow 2(\pi^+\pi^-)\eta) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{total}] \times [B(\eta \rightarrow 2\gamma)] = 5.16 \pm 0.85 \pm 0.39$ eV which we divide by our best value $B(\eta \rightarrow 2\gamma) = (39.31 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{93}\Gamma_5/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
11.6±0.9 OUR AVERAGE Error includes scale factor of 1.2.					
12.0±0.6±0.5	438	AUBERT	06B		$e^+e^- \rightarrow p\overline{p}\gamma$
9.7±1.7		[35] ARMSTRONG	93B	E760	$\overline{p}p \rightarrow e^+e^-$

[35] Using $\Gamma_{total} = 85.5^{+6.1}_{-5.8}$ MeV.

$\Gamma(\Sigma^0\overline{\Sigma}^0) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{105}\Gamma_5/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
6.4±1.2±0.6	AUBERT	07BD	BABR	10.6 $e^+e^- \to \Sigma^0\overline{\Sigma}^0\gamma$

$\Gamma(2(\pi^+\pi^-)K^+K^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{106}\Gamma_5/\Gamma$

VALUE (10^{-2} keV)	EVTS	DOCUMENT ID		TECN	COMMENT
2.75±0.23±0.17	205	AUBERT	06D	BABR	10.6 $e^+e^- \to K^+K^-2(\pi^+\pi^-)\gamma$

$\Gamma(\Lambda\overline{\Lambda}) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{112}\Gamma_5/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
10.7±0.9±0.7	AUBERT	07BD	BABR	10.6 $e^+e^- \to \Lambda\overline{\Lambda}\gamma$

$\Gamma(2(K^+K^-)) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{115}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
4.11±0.39±0.30	156 ± 15	AUBERT	07AK	BABR	10.6 $e^+e^- \to 2(K^+K^-)\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.0 ±0.7 ±0.6	38	[36] AUBERT	05D	BABR	10.6 $e^+e^- \to 2(K^+K^-)\gamma$

[36] Superseded by AUBERT 07AK.

$J/\psi(1S)$ BRANCHING RATIOS

For the first four branching ratios, see also the partial widths, and (partial widths) $\times \Gamma(e^+e^-)/\Gamma_{total}$ above.

$\Gamma(\text{hadrons})/\Gamma_{total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.877±0.005 OUR AVERAGE				
0.878±0.005	BAI	95B	BES	e^+e^-
0.86 ±0.02	BOYARSKI	75	MRK1	e^+e^-

$\Gamma(\text{virtual}\gamma \to \text{hadrons})/\Gamma_{total}$ — Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.135±0.003	[37,38] SETH	04	RVUE	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.17 ±0.02	[37] BOYARSKI	75	MRK1	e^+e^-

[37] Included in $\Gamma(\text{hadrons})/\Gamma_{total}$.

[38] Using B($J/\psi \to \ell^+\ell^-$) = (5.90 ± 0.09)% from RPP-2002 and R = 2.28 ± 0.04 determined by a fit to data from BAI 00 and BAI 02C.

$\Gamma(ggg)/\Gamma_{total}$ — Γ_3/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
64.1±1.0	6 M	[39] BESSON	08	CLEO	$\psi(2S) \to \pi^+\pi^- +$ hadrons

[39] Calculated using the value $\Gamma(\gamma gg)/\Gamma(ggg)$ = 0.137 ± 0.001 ± 0.016 ± 0.004 from BESSON 08 and the PDG 08 values of B($\ell^+\ell^-$), B(virtual $\gamma \to$ hadrons), and B($\gamma\eta_c$). The statistical error is negligible and the systematic error is partially correlated with that of $\Gamma(\gamma gg)/\Gamma_{total}$ measurement of BESSON 08.

$\Gamma(\gamma g g)/\Gamma_{total}$ — Γ_4/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
8.79±1.05	200 k	[40] BESSON	08	CLEO	$\psi(2S) \to \pi^+\pi^-\gamma$ + hadrons

[40] Calculated using the value $\Gamma(\gamma g g)/\Gamma(g g g) = 0.137 \pm 0.001 \pm 0.016 \pm 0.004$ from BESSON 08 and the value of $\Gamma(g g g)/\Gamma_{total}$. The statistical error is negligible and the systematic error is partially correlated with that of $\Gamma(g g g)/\Gamma_{total}$ measurement of BESSON 08.

$\Gamma(\gamma g g)/\Gamma(g g g)$ — Γ_4/Γ_3

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
13.7±0.1±0.7	6 M	BESSON	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$

$\Gamma(e^+e^-)/\Gamma_{total}$ — Γ_5/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.94 ±0.06 OUR AVERAGE					
5.945±0.067±0.042	15k	LI	05C	CLEO	$\psi(2S) \to J/\psi\pi^+\pi^-$
5.90 ±0.05 ±0.10		BAI	98D	BES	$\psi(2S) \to J/\psi\pi^+\pi^-$
6.09 ±0.33		BAI	95B	BES	e^+e^-
5.92 ±0.15 ±0.20		COFFMAN	92	MRK3	$\psi(2S) \to J/\psi\pi^+\pi^-$
6.9 ±0.9		BOYARSKI	75	MRK1	e^+e^-

$\Gamma(\mu^+\mu^-)/\Gamma_{total}$ — Γ_6/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.93 ±0.06 OUR AVERAGE					
5.960±0.065±0.050	17k	LI	05C	CLEO	$\psi(2S) \to J/\psi\pi^+\pi^-$
5.84 ±0.06 ±0.10		BAI	98D	BES	$\psi(2S) \to J/\psi\pi^+\pi^-$
6.08 ±0.33		BAI	95B	BES	e^+e^-
5.90 ±0.15 ±0.19		COFFMAN	92	MRK3	$\psi(2S) \to J/\psi\pi^+\pi^-$
6.9 ±0.9		BOYARSKI	75	MRK1	e^+e^-

$\Gamma(e^+e^-)/\Gamma(\mu^+\mu^-)$ — Γ_5/Γ_6

VALUE	DOCUMENT ID		TECN	COMMENT
0.998±0.012 OUR AVERAGE				
1.002±0.021±0.013	[41] ANASHIN	10	KEDR	$3.097\ e^+e^- \to e^+e^-,\ \mu^+\mu^-$
0.997±0.012±0.006	LI	05C	CLEO	$\psi(2S) \to J/\psi\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.00 ±0.07	BAI	95B	BES	e^+e^-
1.00 ±0.05	BOYARSKI	75	MRK1	e^+e^-
0.91 ±0.15	ESPOSITO	75B	FRAM	e^+e^-
0.93 ±0.10	FORD	75	SPEC	e^+e^-

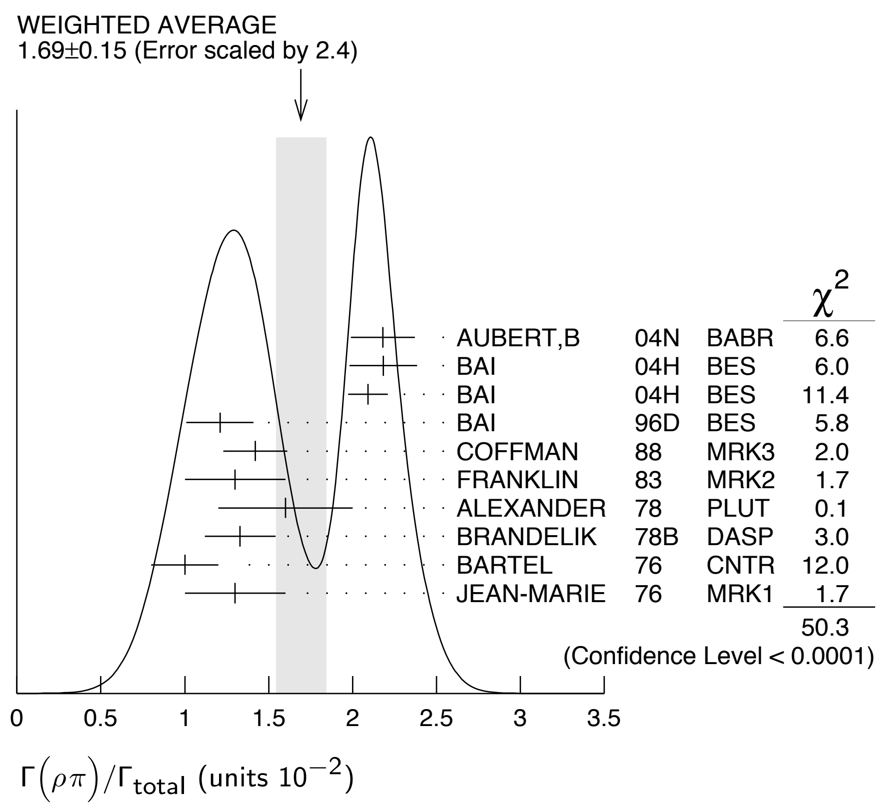
[41] Not independent of the corresponding measurements of $\Gamma(e^+e^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ and $\Gamma(\mu^+\mu^-) \times \Gamma(e^+e^-)/\Gamma_{total}$.

HADRONIC DECAYS

$\Gamma(\rho\pi)/\Gamma_{total}$ Γ_7/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.69 ±0.15 OUR AVERAGE		Error includes scale factor of 2.4. See the ideogram below.			
2.18 ±0.19		[42,43] AUBERT,B	04N	BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-\pi^0\gamma$
2.184±0.005±0.201	220k	[43,44] BAI	04H	BES	$e^+e^- \rightarrow J/\psi \rightarrow \pi^+\pi^-\pi^0$
2.091±0.021±0.116		[43,45] BAI	04H	BES	$\psi(2S) \rightarrow \pi^+\pi^- J/\psi$
1.21 ±0.20		BAI	96D	BES	$e^+e^- \rightarrow \rho\pi$
1.42 ±0.01 ±0.19		COFFMAN	88	MRK3	e^+e^-
1.3 ±0.3	150	FRANKLIN	83	MRK2	e^+e^-
1.6 ±0.4	183	ALEXANDER	78	PLUT	e^+e^-
1.33 ±0.21		BRANDELIK	78B	DASP	e^+e^-
1.0 ±0.2	543	BARTEL	76	CNTR	e^+e^-
1.3 ±0.3	153	JEAN-MARIE	76	MRK1	e^+e^-

[42] From the ratio of $\Gamma(e^+e^-)$ B$(\pi^+\pi^-\pi^0)$ and $\Gamma(e^+e^-)$ B$(\mu^+\mu^-)$ (AUBERT 04).
[43] Not independent of their B$(\pi^+\pi^-\pi^0)$.
[44] From $J/\psi \rightarrow \pi^+\pi^-\pi^0$ events directly.
[45] Obtained comparing the rates for $\pi^+\pi^-\pi^0$ and $\mu^+\mu^-$, using J/ψ events produced via $\psi(2S) \rightarrow \pi^+\pi^- J/\psi$ and with B$(J/\psi \rightarrow \mu^+\mu^-) = 5.88 \pm 0.10\%$.



$\Gamma(\rho^0\pi^0)/\Gamma(\rho\pi)$ — Γ_8/Γ_7

VALUE	DOCUMENT ID		TECN	COMMENT
0.328±0.005±0.027	COFFMAN	88	MRK3	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.35 ±0.08	ALEXANDER	78	PLUT	e^+e^-
0.32 ±0.08	BRANDELIK	78B	DASP	e^+e^-
0.39 ±0.11	BARTEL	76	CNTR	e^+e^-
0.37 ±0.09	JEAN-MARIE	76	MRK1	e^+e^-

$\Gamma(a_2(1320)\rho)/\Gamma_{total}$ — Γ_9/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
10.9±2.2 OUR AVERAGE					
11.7±0.7±2.5	7584	AUGUSTIN	89	DM2	$J/\psi \to \rho^0\rho^\pm\pi^\mp$
8.4±4.5	36	VANNUCCI	77	MRK1	$e^+e^- \to 2(\pi^+\pi^-)\pi^0$

$\Gamma(\omega\pi^+\pi^+\pi^-\pi^-)/\Gamma_{total}$ — Γ_{10}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
85±34	140	VANNUCCI	77	MRK1	$e^+e^- \to 3(\pi^+\pi^-)\pi^0$

$\Gamma(\omega\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{11}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.40±0.06±0.04	170	[46] AUBERT	06D	BABR	10.6 $e^+e^- \to \omega\pi^+\pi^-\pi^0\gamma$

[46] Using $\Gamma(J/\psi \to e^+e^-) = 5.52 \pm 0.14 \pm 0.04$ keV.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
8.6±0.7 OUR AVERAGE	Error includes scale factor of 1.1.				
9.7±0.6±0.6	788	[47] AUBERT	07AU	BABR	10.6 $e^+e^- \to \omega\pi^+\pi^-\gamma$
7.0±1.6	18058	AUGUSTIN	89	DM2	$J/\psi \to 2(\pi^+\pi^-)\pi^0$
7.8±1.6	215	BURMESTER	77D	PLUT	e^+e^-
6.8±1.9	348	VANNUCCI	77	MRK1	$e^+e^- \to 2(\pi^+\pi^-)\pi^0$

[47] AUBERT 07AU quotes $\Gamma_{ee}^{J/\psi} \cdot B(J/\psi \to \omega\pi^+\pi^-) \cdot B(\omega \to 3\pi) = 47.8 \pm 3.1 \pm 3.2$ eV.

$\Gamma(\omega f_2(1270))/\Gamma_{total}$ — Γ_{13}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.3±0.6 OUR AVERAGE					
4.3±0.2±0.6	5860	AUGUSTIN	89	DM2	e^+e^-
4.0±1.6	70	BURMESTER	77D	PLUT	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.9±0.8	81	VANNUCCI	77	MRK1	$e^+e^- \to 2(\pi^+\pi^-)\pi^0$

$\Gamma(K^*(892)^0\overline{K}_2^*(1430)^0 + c.c.)/\Gamma_{total}$ — Γ_{14}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
6.0±0.6 OUR AVERAGE					
5.9±0.6±0.2	317 ± 23	[48,49] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^+\pi^-K^+K^-\gamma$
6.7±2.6	40	VANNUCCI	77	MRK1	$e^+e^- \to \pi^+\pi^-K^+K^-$

[48] Using B($K_2^*(1430)^0 \to K\pi$) = (49.9 ± 1.2)%.

[49] AUBERT 07AK reports [$\Gamma(J/\psi(1S) \to K^*(892)^0 \overline{K}_2^*(1430)^0 +$ c.c.$)/\Gamma_{total}$] × [$\Gamma(J/\psi(1S) \to e^+e^-)$] = (32.9 ± 2.3 ± 2.7) × 10^{-3} keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\omega K^*(892)\overline{K}+$c.c.$)/\Gamma_{total}$ — Γ_{16}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
61 ± 9 OUR AVERAGE					
62.0± 6.8±10.6	899 ± 98	ABLIKIM	08E	BES2	$J/\psi \to \omega K^0_S K^\pm \pi^\mp$
65.3±10.2±13.5	176 ± 28	ABLIKIM	08E	BES2	$J/\psi \to \omega K^+ K^- \pi^0$
53 ±14 ±14	530 ± 140	BECKER	87	MRK3	$e^+e^- \to$ hadrons

$\Gamma(K^+\overline{K}^*(892)^- +$c.c.$)/\Gamma_{total}$ — Γ_{17}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.12±0.30 OUR AVERAGE					
5.2 ±0.4 ±0.1		[50] AUBERT	08S	BABR	10.6 $e^+e^- \to K^+ K^*(892)^- \gamma$
4.57±0.17±0.70	2285	JOUSSET	90	DM2	$J/\psi \to$ hadrons
5.26±0.13±0.53		COFFMAN	88	MRK3	$J/\psi \to K^\pm K^0_S \pi^\mp$, $K^+K^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.6 ±0.6	24	FRANKLIN	83	MRK2	$J/\psi \to K^+K^-\pi^0$
3.2 ±0.6	48	VANNUCCI	77	MRK1	$J/\psi \to K^\pm K^0_S \pi^\mp$
4.1 ±1.2	39	BRAUNSCH...	76	DASP	$J/\psi \to K^\pm X$

[50] AUBERT 08S reports [$\Gamma(J/\psi(1S) \to K^+\overline{K}^*(892)^- +$ c.c.$)/\Gamma_{total}$] × [$\Gamma(J/\psi(1S) \to e^+e^-)$] = (29.0±1.7±1.3)×$10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+\overline{K}^*(892)^- +$c.c.$\to K^+K^-\pi^0)/\Gamma_{total}$ — Γ_{18}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.97±0.20±0.05	155	[51] AUBERT	08S	BABR	10.6 $e^+e^- \to K^+K^-\pi^0\gamma$

[51] AUBERT 08S reports [$\Gamma(J/\psi(1S) \to K^+\overline{K}^*(892)^- +$ c.c. $\to K^+K^-\pi^0)/\Gamma_{total}$] × [$\Gamma(J/\psi(1S) \to e^+e^-)$] = (10.96 ± 0.85 ± 0.70) × 10^{-3} keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+\overline{K}^*(892)^- +$c.c.$\to K^0K^\pm\pi^\mp)/\Gamma_{total}$ — Γ_{19}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.0±0.4±0.1	89	[52] AUBERT	08S	BABR	10.6 $e^+e^- \to K^0_S K^\pm \pi^\mp \gamma$

[52] AUBERT 08S reports [$\Gamma(J/\psi(1S) \to K^+\overline{K}^*(892)^- +$ c.c. $\to K^0K^\pm\pi^\mp)/\Gamma_{total}$] × [$\Gamma(J/\psi(1S) \to e^+e^-)$] = (16.76 ± 1.70 ± 1.00) × 10^{-3} keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^0\overline{K}^*(892)^0 + \text{c.c.})/\Gamma_{\text{total}}$ — Γ_{20}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.39±0.31 OUR AVERAGE					
4.8 ±0.5 ±0.1		[53] AUBERT	08S	BABR	10.6 $e^+e^- \to K^0\overline{K}^*(892)^0\gamma$
3.96±0.15±0.60	1192	JOUSSET	90	DM2	$J/\psi \to$ hadrons
4.33±0.12±0.45		COFFMAN	88	MRK3	$J/\psi \to K^\pm K^0_S\pi^\mp$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.7 ±0.6	45	VANNUCCI	77	MRK1	$J/\psi \to K^\pm K^0_S\pi^\mp$

[53] AUBERT 08S reports $[\Gamma(J/\psi(1S) \to K^0\overline{K}^*(892)^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (26.6\pm2.5\pm1.5)\times10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^0\overline{K}^*(892)^0 + \text{c.c.})/\Gamma(K^+\overline{K}^*(892)^- + \text{c.c.})$ — Γ_{20}/Γ_{17}

VALUE	DOCUMENT ID		TECN	COMMENT
0.82±0.05±0.09	COFFMAN	88	MRK3	$J/\psi \to K\overline{K}^*(892)$+c.c.

$\Gamma(K^0\overline{K}^*(892)^0 + \text{c.c.} \to K^0K^\pm\pi^\mp)/\Gamma_{\text{total}}$ — Γ_{21}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.2±0.4±0.1	94	[54] AUBERT	08S	BABR	10.6 $e^+e^- \to K^0_S K^\pm\pi^\mp\gamma$

[54] AUBERT 08S reports $[\Gamma(J/\psi(1S) \to K^0\overline{K}^*(892)^0 + \text{c.c.} \to K^0K^\pm\pi^\mp)/\Gamma_{\text{total}}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (17.70 \pm 1.70 \pm 1.00) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K_1(1400)^\pm K^\mp)/\Gamma_{\text{total}}$ — Γ_{22}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
3.8±0.8±1.2	[55] BAI	99C	BES	e^+e^-

[55] Assuming B($K_1(1400) \to K^*\pi$)=0.94 ± 0.06

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

VALUE	DOCUMENT ID		TECN	COMMENT
seen	[56] ABLIKIM	06C	BES2	$J/\psi \to \overline{K}^*(892)^0K^+\pi^-$

[56] A $K^*_0(800)$ is observed by ABLIKIM 06C in the $K^+\pi^-$ mass spectrum of the $\overline{K}^*(892)^0K^+\pi^-$ final state against the $\overline{K}^*(892)$. A corresponding branching fraction of the $J/\psi(1S)$ is not presented.

$\Gamma(\omega\pi^0\pi^0)/\Gamma_{\text{total}}$ — Γ_{24}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.4±0.3±0.7	509	AUGUSTIN	89	DM2	$J/\psi \to \pi^+\pi^-3\pi^0$

$\Gamma(b_1(1235)^\pm\pi^\mp)/\Gamma_{\text{total}}$ — Γ_{25}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
30±5 OUR AVERAGE					
31±6	4600	AUGUSTIN	89	DM2	$J/\psi \to 2(\pi^+\pi^-)\pi^0$
29±7	87	BURMESTER	77D	PLUT	e^+e^-

$\Gamma(\omega K^{\pm} K^0_S \pi^{\mp})/\Gamma_{total}$ Γ_{26}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
34 ±5 OUR AVERAGE					
37.7±0.8±5.8	1972 ± 41	ABLIKIM	08E	BES2	$e^+e^- \rightarrow J/\psi$
29.5±1.4±7.0	879 ± 41	BECKER	87	MRK3	$e^+e^- \rightarrow$ hadrons

$\Gamma(b_1(1235)^0 \pi^0)/\Gamma_{total}$ Γ_{27}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
23±3±5	229	AUGUSTIN	89	DM2	e^+e^-

$\Gamma(\eta K^{\pm} K^0_S \pi^{\mp})/\Gamma_{total}$ Γ_{28}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
21.8±2.2±3.4	232 ± 23	ABLIKIM	08E	BES2	$e^+e^- \rightarrow J/\psi$

$\Gamma(\phi K^*(892)\overline{K}+\text{c.c.})/\Gamma_{total}$ Γ_{29}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
21.8±2.3 OUR AVERAGE					
20.8±2.7±3.9	195 ± 25	ABLIKIM	08E	BES2	$J/\psi \rightarrow \phi K^0_S K^{\pm}\pi^{\mp}$
29.6±3.7±4.7	238 ± 30	ABLIKIM	08E	BES2	$J/\psi \rightarrow \phi K^+ K^- \pi^0$
20.7±2.4±3.0		FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons
20 ±3 ±3	155 ± 20	BECKER	87	MRK3	$e^+e^- \rightarrow$ hadrons

$\Gamma(\omega K \overline{K})/\Gamma_{total}$ Γ_{30}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.6 ± 0.5 OUR AVERAGE					
1.36± 0.50±0.10	24	[57] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow \omega K^+ K^- \gamma$
19.8 ± 2.1 ±3.9		[58] FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons
16 ±10	22	FELDMAN	77	MRK1	e^+e^-

[57] AUBERT 07AU quotes $\Gamma^{J/\psi}_{ee} \cdot$ B$(J/\psi \rightarrow \omega K^+ K^-) \cdot$B$(\eta \rightarrow 3\pi) = 3.3 \pm 1.3 \pm 0.2$ eV.

[58] Addition of $\omega K^+ K^-$ and $\omega K^0 \overline{K}^0$ branching ratios.

$\Gamma(\omega f_0(1710) \rightarrow \omega K \overline{K})/\Gamma_{total}$ Γ_{31}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.8±1.1±0.3	[59,60] FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons

[59] Includes unknown branching fraction $f_0(1710) \rightarrow K\overline{K}$.

[60] Addition of $f_0(1710) \rightarrow K^+ K^-$ and $f_0(1710) \rightarrow K^0 \overline{K}^0$ branching ratios.

$\Gamma(\phi 2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{32}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
16.6±2.3 OUR AVERAGE					
17.3±3.3±1.2	35	[61] AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow \phi 2(\pi^+\pi^-)\gamma$
16.0±1.0±3.0		FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons

[61] Using $\Gamma(J/\psi \rightarrow e^+e^-) = 5.52 \pm 0.14 \pm 0.04$ keV.

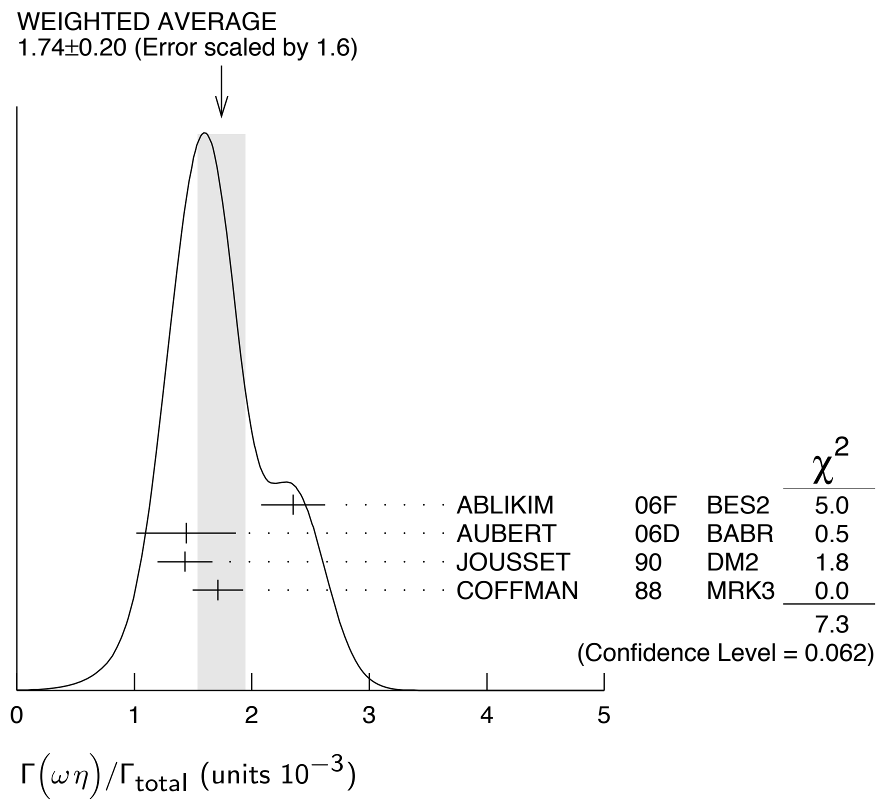
$\Gamma(\Delta(1232)^{++} \overline{p} \pi^-)/\Gamma_{total}$ Γ_{33}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.58±0.23±0.40	332	EATON	84	MRK2	e^+e^-

$\Gamma(\omega\eta)/\Gamma_{total}$ — Γ_{34}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.74 ±0.20 OUR AVERAGE		Error includes scale factor of 1.6. See the ideogram below.			
2.352±0.273	5k	[62] ABLIKIM	06F	BES2	$J/\psi \to \omega\eta$
1.44 ±0.40 ±0.14	13	[63] AUBERT	06D	BABR	10.6 $e^+e^- \to \omega\eta\gamma$
1.43 ±0.10 ±0.21	378	JOUSSET	90	DM2	$J/\psi \to$ hadrons
1.71 ±0.08 ±0.20		COFFMAN	88	MRK3	$e^+e^- \to 3\pi\eta$

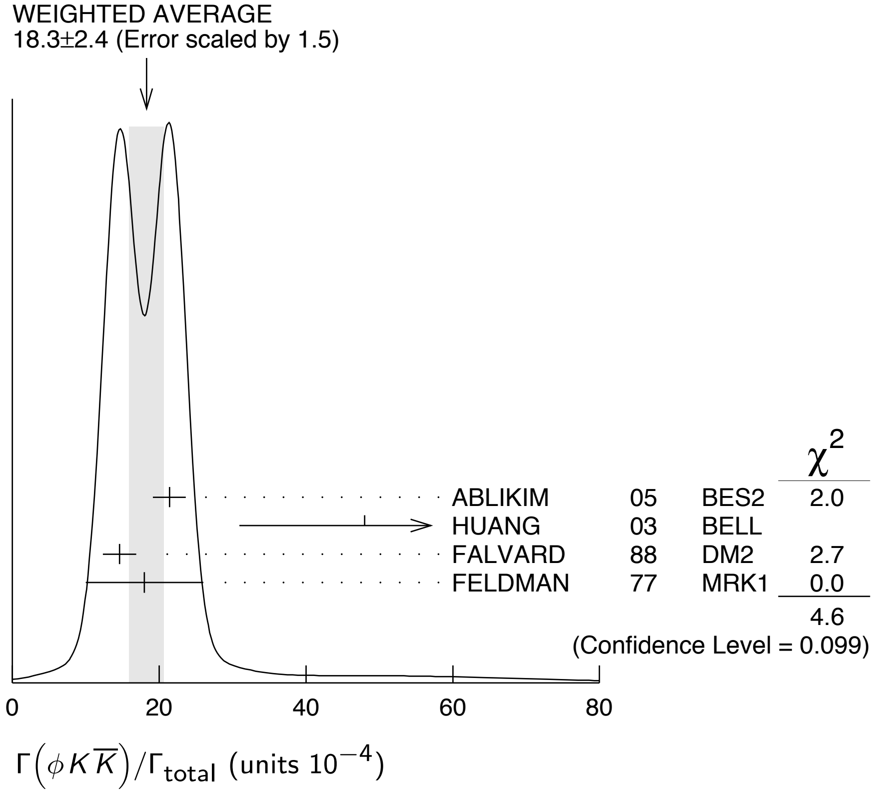
[62] Using B($\eta \to 2\gamma$) = (39.43 ± 0.26)%, B($\eta \to \pi^+\pi^-\pi^0$) = 22.6 ± 0.4%, B($\eta \to \pi^+\pi^-\gamma$) = 4.68 ± 0.11%, and B($\omega \to \pi^+\pi^-\pi^0$) = (89.1 ± 0.7)%.
[63] Using $\Gamma(J/\psi \to e^+e^-)$ = 5.52 ± 0.14 ± 0.04 keV.



$\Gamma(\phi K\overline{K})/\Gamma_{total}$ — Γ_{35}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
18.3± 2.4 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.			
21.4± 0.4±2.2		ABLIKIM	05	BES2	$J/\psi \to \phi\pi^+\pi^-$
48 $^{+20}_{-16}$ ±6	$9.0^{+3.7}_{-3.0}$	[64,65] HUANG	03	BELL	$B^+ \to (\phi K^+K^-) K^+$
14.6± 0.8±2.1		[66] FALVARD	88	DM2	$J/\psi \to$ hadrons
18 ± 8	14	FELDMAN	77	MRK1	e^+e^-

[64] We have multiplied K^+K^- measurement by 2 to obtain $K\overline{K}$.
[65] Using B($B^+ \to J/\psi K^+$) = $(1.01 \pm 0.05) \times 10^{-3}$.
[66] Addition of ϕK^+K^- and $\phi K^0\overline{K}^0$ branching ratios.



$\Gamma\big(\phi f_0(1710) \to \phi K\overline{K}\big)/\Gamma_{\text{total}}$ Γ_{36}/Γ

VALUE (units 10^{-4})		*DOCUMENT ID*		*TECN*	*COMMENT*
3.6±0.2±0.6	[67,68]	FALVARD	88	DM2	$J/\psi \to$ hadrons

[67] Including interference with $f_2'(1525)$.

[68] Includes unknown branching fraction $f_0(1710) \to K\overline{K}$.

$\Gamma\big(\Delta(1232)^{++}\overline{\Delta}(1232)^{--}\big)/\Gamma_{\text{total}}$ Γ_{37}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.10±0.09±0.28	233	EATON	84	MRK2	e^+e^-

$\Gamma\big(\Sigma(1385)^-\overline{\Sigma}(1385)^+ \text{(or c.c.)}\big)/\Gamma_{\text{total}}$ Γ_{38}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.03±0.13 OUR AVERAGE					
1.00±0.04±0.21	631 ± 25	HENRARD	87	DM2	$e^+e^- \to \Sigma^{*-}$
1.19±0.04±0.25	754 ± 27	HENRARD	87	DM2	$e^+e^- \to \Sigma^{*+}$
0.86±0.18±0.22	56	EATON	84	MRK2	$e^+e^- \to \Sigma^{*-}$
1.03±0.24±0.25	68	EATON	84	MRK2	$e^+e^- \to \Sigma^{*+}$

$\Gamma\big(\phi f_2'(1525)\big)/\Gamma_{\text{total}}$ Γ_{39}/Γ

VALUE (units 10^{-4})	*EVTS*		*DOCUMENT ID*		*TECN*	*COMMENT*
8 ±4 OUR AVERAGE	Error includes scale factor of 2.7.					
12.3±0.6±2.0		[69,70]	FALVARD	88	DM2	$J/\psi \to$ hadrons
4.8±1.8	46	[69]	GIDAL	81	MRK2	$J/\psi \to K^+K^-K^+K^-$

[69] Re-evaluated using $B(f_2'(1525) \to K\overline{K}) = 0.713$.

[70] Including interference with $f_0(1710)$.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.94±0.09 OUR AVERAGE		Error includes scale factor of 1.2.			
0.96±0.13	103	[71] AUBERT,BE	06D	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$
1.09±0.02±0.13		ABLIKIM	05	BES2	$J/\psi \rightarrow \phi\pi^+\pi^-$
0.78±0.03±0.12		FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons
2.1 ±0.9	23	FELDMAN	77	MRK1	e^+e^-

[71] Derived by us. AUBERT,BE 06D measures $\Gamma(J/\psi \rightarrow e^+e^-) \times B(J/\psi \rightarrow \phi\pi^+\pi^-) \times B(\phi \rightarrow K^+K^-) = (2.61 \pm 0.30 \pm 0.18)$ eV

$\Gamma(\phi\pi^0\pi^0)/\Gamma_{total}$ — Γ_{41}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.56±0.16	23	[72] AUBERT,BE	06D	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^0\pi^0\gamma$

[72] Derived by us. AUBERT,BE 06D measures $\Gamma(J/\psi \rightarrow e^+e^-) \times B(J/\psi \rightarrow \phi\pi^0\pi^0) \times B(\phi \rightarrow K^+K^-) = (1.54 \pm 0.40 \pm 0.16)$ eV

$\Gamma(\phi K^\pm K^0_S\pi^\mp)/\Gamma_{total}$ — Γ_{42}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.2±0.8 OUR AVERAGE					
7.4±0.6±1.4	227 ± 19	ABLIKIM	08E	BES2	$e^+e^- \rightarrow J/\psi$
7.4±0.9±1.1		FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons
7 ±0.6±1.0	163 ± 15	BECKER	87	MRK3	$e^+e^- \rightarrow$ hadrons

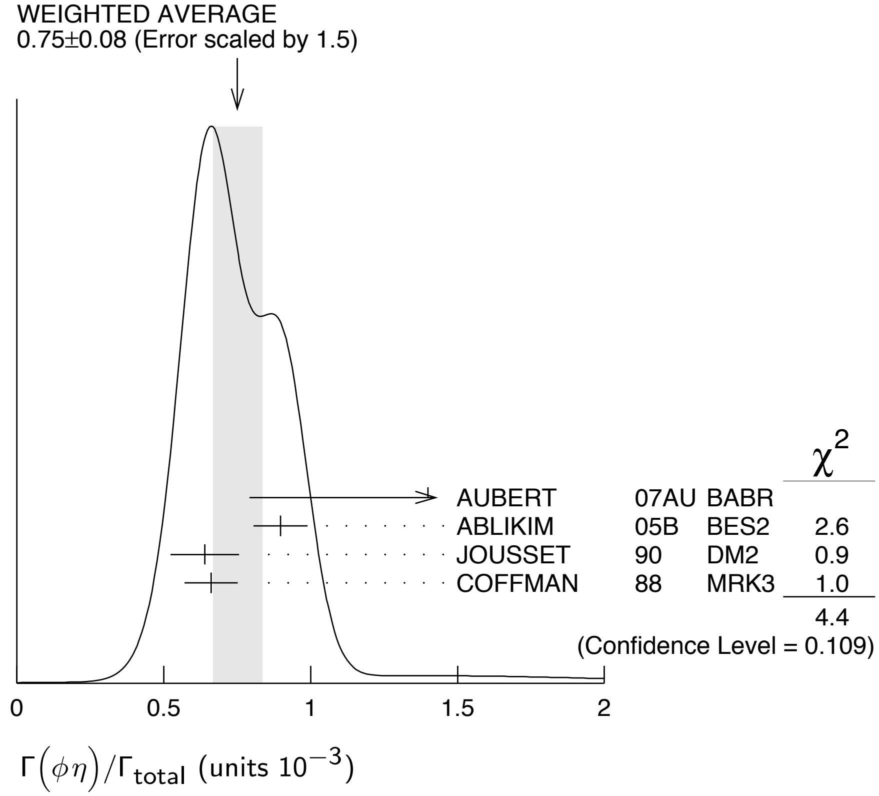
$\Gamma(\omega f_1(1420))/\Gamma_{total}$ — Γ_{43}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{6.8^{+1.9}_{-1.6}\pm1.7}$	111^{+31}_{-26}	BECKER	87	MRK3	$e^+e^- \rightarrow$ hadrons

$\Gamma(\phi\eta)/\Gamma_{total}$ — Γ_{44}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.75 ±0.08 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.			
1.4 ±0.6 ±0.1	6	[73] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow \phi\eta\gamma$
0.898±0.024±0.089		ABLIKIM	05B	BES2	$e^+e^- \rightarrow J/\psi \rightarrow$ hadr
0.64 ±0.04 ±0.11	346	JOUSSET	90	DM2	$J/\psi \rightarrow$ hadrons
0.661±0.045±0.078		COFFMAN	88	MRK3	$e^+e^- \rightarrow K^+K^-\eta$

[73] AUBERT 07AU quotes $\Gamma^{J/\psi}_{ee} \cdot B(J/\psi \rightarrow \phi\eta) \cdot B(\phi \rightarrow K^+K^-) \cdot B(\eta \rightarrow \gamma\gamma) = 0.84 \pm 0.37 \pm 0.05$ eV.



$\Gamma(\Xi^0\overline{\Xi}^0)/\Gamma_{total}$ Γ_{45}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.20±0.12±0.21	206	ABLIKIM	08O	BES2	$e^+e^- \rightarrow J/\psi$

$\Gamma(\Xi(1530)^-\overline{\Xi}^+)/\Gamma_{total}$ Γ_{46}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.59±0.09±0.12	75 ± 11	HENRARD	87	DM2	e^+e^-

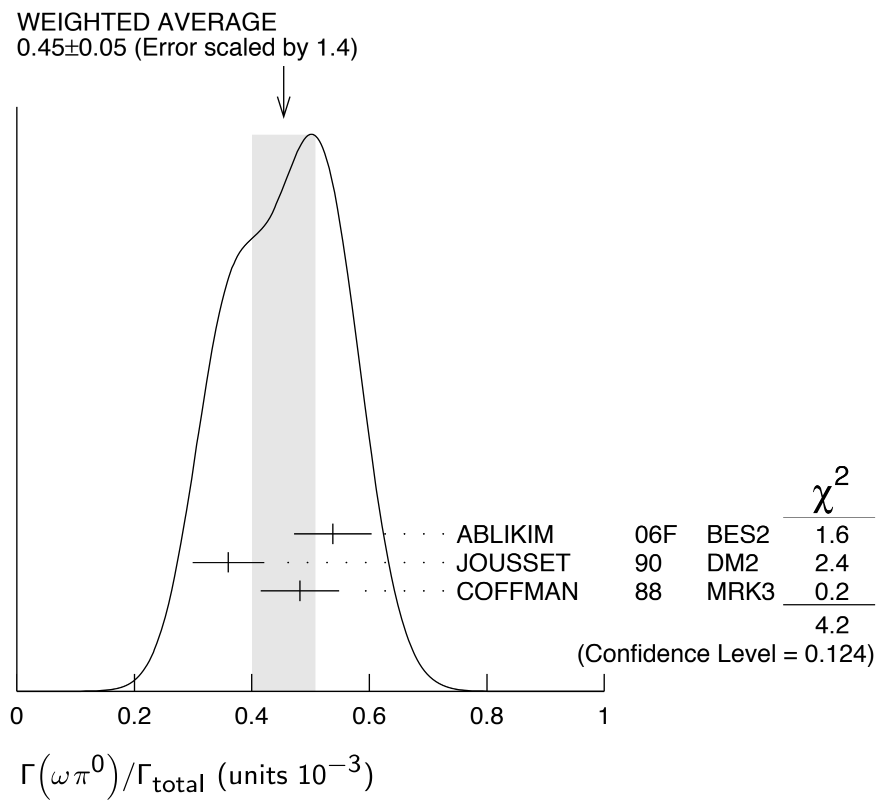
$\Gamma(pK^-\overline{\Sigma}(1385)^0)/\Gamma_{total}$ Γ_{47}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.51±0.26±0.18	89	EATON	84	MRK2	e^+e^-

$\Gamma(\omega\pi^0)/\Gamma_{total}$ Γ_{48}/Γ

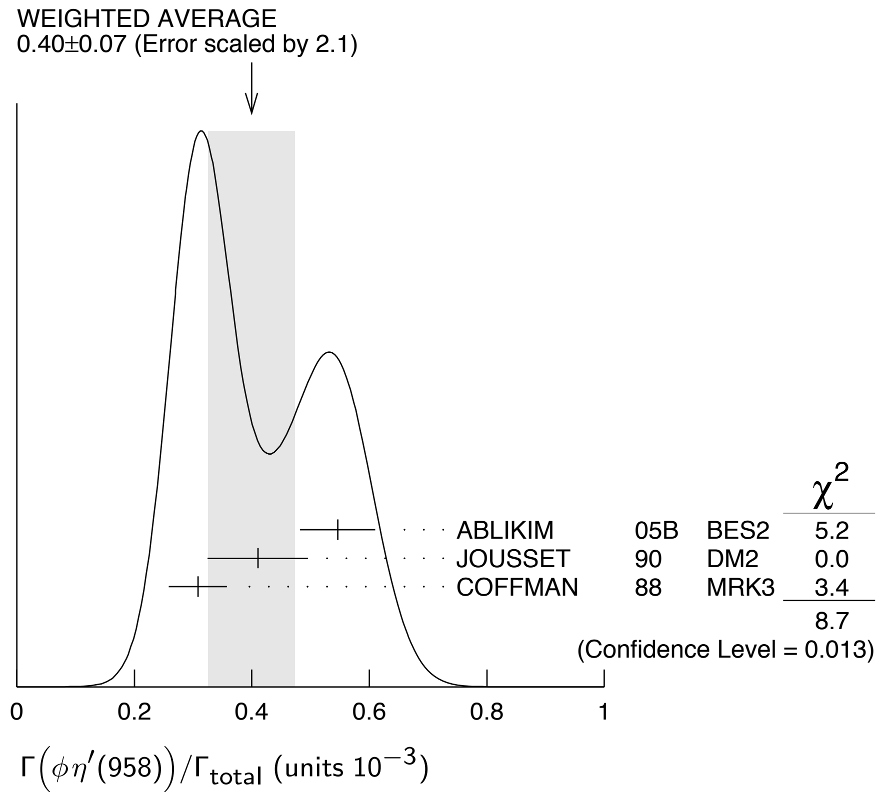
VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.45 ±0.05 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.			
0.538±0.012±0.065	2090	[74] ABLIKIM	06F	BES2	$J/\psi \rightarrow \omega\pi^0$
0.360±0.028±0.054	222	JOUSSET	90	DM2	$J/\psi \rightarrow$ hadrons
0.482±0.019±0.064		COFFMAN	88	MRK3	$e^+e^- \rightarrow \pi^0\pi^+\pi^-\pi^0$

[74] Using B($\omega \to \pi^+ \pi^- \pi^0$) = (89.1 ± 0.7)%.



$\Gamma\left(\phi\eta'(958)\right)/\Gamma_{total}$ Γ_{49}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.40 ±0.07 OUR AVERAGE			Error includes scale factor of 2.1. See the ideogram below.			
0.546±0.031±0.056			ABLIKIM	05B	BES2	$e^+ e^- \to J/\psi \to$ hadr
0.41 ±0.03 ±0.08		167	JOUSSET	90	DM2	$J/\psi \to$ hadrons
0.308±0.034±0.036			COFFMAN	88	MRK3	$e^+ e^- \to K^+ K^- \eta'$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 1.3	90		VANNUCCI	77	MRK1	$e^+ e^-$



$\Gamma(\phi f_0(980))/\Gamma_{total}$ Γ_{50}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.2±0.9 OUR AVERAGE	Error includes scale factor of 1.9.				
$4.6\pm0.4\pm0.8$		[75] FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons
2.6 ± 0.6	50	[75] GIDAL	81	MRK2	$J/\psi \rightarrow K^+K^-K^+K^-$

[75] Assuming B($f_0(980) \rightarrow \pi\pi$) = 0.78.

$\Gamma(\phi f_0(980) \rightarrow \phi\pi^+\pi^-)/\Gamma_{total}$ Γ_{51}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.182±0.042±0.005	19.5 ± 4.5	[76,77] AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma$

[76] Using B($\phi \rightarrow K^+K^-$) = (49.3 ± 0.6)%.

[77] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_0(980) \rightarrow \phi\pi^+\pi^-)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (1.01 \pm 0.22 \pm 0.08) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi f_0(980) \rightarrow \phi\pi^0\pi^0)/\Gamma_{total}$ Γ_{52}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.171±0.073±0.004	7.0 ± 2.8	[78,79] AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^0\pi^0K^+K^-\gamma$

[78] Using B($\phi \rightarrow K^+K^-$) = (49.3 ± 0.6)%.

[79] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_0(980) \rightarrow \phi\pi^0\pi^0)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (0.95 \pm 0.39 \pm 0.10) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Xi(1530)^0 \overline{\Xi}^0)/\Gamma_{total}$ — Γ_{53}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.32±0.12±0.07	24 ± 9	HENRARD	87	DM2	$e^+ e^-$

$\Gamma(\Sigma(1385)^- \overline{\Sigma}^+ \text{(or c.c.)})/\Gamma_{total}$ — Γ_{54}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.31±0.05 OUR AVERAGE					
0.30±0.03±0.07	74 ± 8	HENRARD	87	DM2	$e^+ e^- \rightarrow \Sigma^{*-}$
0.34±0.04±0.07	77 ± 9	HENRARD	87	DM2	$e^+ e^- \rightarrow \Sigma^{*+}$
0.29±0.11±0.10	26	EATON	84	MRK2	$e^+ e^- \rightarrow \Sigma^{*-}$
0.31±0.11±0.11	28	EATON	84	MRK2	$e^+ e^- \rightarrow \Sigma^{*+}$

$\Gamma(\phi f_1(1285))/\Gamma_{total}$ — Γ_{55}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.6±0.5 OUR AVERAGE Error includes scale factor of 1.1.					
3.2±0.6±0.4		JOUSSET	90	DM2	$J/\psi \rightarrow \phi 2(\pi^+ \pi^-)$
2.1±0.5±0.4	25	[80] JOUSSET	90	DM2	$J/\psi \rightarrow \phi \eta \pi^+ \pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.6±0.2±0.1	16 ± 6	BECKER	87	MRK3	$J/\psi \rightarrow \phi K \overline{K} \pi$

[80] We attribute to the $f_1(1285)$ the signal observed in the $\pi^+ \pi^- \eta$ invariant mass distribution at 1297 Mev.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.40±0.17±0.03	9	[81] AUBERT	07AU	BABR	10.6 $e^+ e^- \rightarrow \eta \pi^+ \pi^- \gamma$

[81] AUBERT 07AU quotes $\Gamma^{J/\psi}_{ee} \cdot B(J/\psi \rightarrow \eta \pi^+ \pi^-) \cdot B(\eta \rightarrow 3\pi) = 0.51 \pm 0.22 \pm 0.03$ eV.

$\Gamma(\rho \eta)/\Gamma_{total}$ — Γ_{57}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.193±0.023 OUR AVERAGE					
0.194±0.017±0.029	299	JOUSSET	90	DM2	$J/\psi \rightarrow$ hadrons
0.193±0.013±0.029		COFFMAN	88	MRK3	$e^+ e^- \rightarrow \pi^+ \pi^- \eta$

$\Gamma(\omega \eta'(958))/\Gamma_{total}$ — Γ_{58}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.182±0.021 OUR AVERAGE					
0.226±0.043	218	[82] ABLIKIM	06F	BES2	$J/\psi \rightarrow \omega \eta'$
$0.18 ^{+0.10}_{-0.08} \pm 0.03$	6	JOUSSET	90	DM2	$J/\psi \rightarrow$ hadrons
0.166±0.017±0.019		COFFMAN	88	MRK3	$e^+ e^- \rightarrow 3\pi \eta'$

[82] Using $B(\eta' \rightarrow \pi^+ \pi^- \eta) = (44.3 \pm 1.5)\%$, $B(\eta' \rightarrow \pi^+ \pi^- \gamma) = 29.5 \pm 1.0\%$, $B(\eta \rightarrow 2\gamma) = 39.43 \pm 0.26\%$, and $B(\omega \rightarrow \pi^+ \pi^- \pi^0) = (89.1 \pm 0.7)\%$.

$\Gamma(\omega f_0(980))/\Gamma_{total}$ — Γ_{59}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.41±0.27±0.47	[83] AUGUSTIN	89	DM2	$J/\psi \rightarrow 2(\pi^+ \pi^-)\pi^0$

[83] Assuming $B(f_0(980) \rightarrow \pi\pi) = 0.78$.

$\Gamma(\rho\eta'(958))/\Gamma_{total}$ — Γ_{60}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.105±0.018 OUR AVERAGE					
$0.083 \pm 0.030 \pm 0.012$	19	JOUSSET	90	DM2	$J/\psi \to$ hadrons
$0.114 \pm 0.014 \pm 0.016$		COFFMAN	88	MRK3	$J/\psi \to \pi^+\pi^-\eta'$

$\Gamma(a_2(1320)^{\pm}\pi^{\mp})/\Gamma_{total}$ — Γ_{61}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<43	90	BRAUNSCH...	76	DASP	e^+e^-

$\Gamma(K\overline{K}^*_2(1430)+\text{c.c.})/\Gamma_{total}$ — Γ_{62}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<40	90	VANNUCCI	77	MRK1	$e^+e^- \to K^0\overline{K}^{*0}_2$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<66	90	BRAUNSCH...	76	DASP	$e^+e^- \to K^{\pm}\overline{K}^{*\mp}_2$

$\Gamma(K_1(1270)^{\pm}K^{\mp})/\Gamma_{total}$ — Γ_{63}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<3.0	90	[84] BAI	99C	BES	e^+e^-

[84] Assuming B($K_1(1270) \to K\rho$)=0.42 ± 0.06

$\Gamma(K^*_2(1430)^0\overline{K}^*_2(1430)^0)/\Gamma_{total}$ — Γ_{64}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<29	90	VANNUCCI	77	MRK1	$e^+e^- \to \pi^+\pi^-K^+K^-$

$\Gamma(K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{total}$ — Γ_{65}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
2.3±0.7±0.1		25 ± 8	[85] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^+\pi^-K^+K^-\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<5	90		VANNUCCI	77	MRK1	$e^+e^- \to \pi^+\pi^-K^+K^-$

[85] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \to K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (1.28 \pm 0.40 \pm 0.11) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi f_2(1270))/\Gamma_{total}$ — Γ_{66}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.72±0.13±0.02		44 ± 7	[86,87] AUBERT	07AK	BABR	10.6 $e^+e^- \to \pi^+\pi^-K^+K^-\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 0.45	90		FALVARD	88	DM2	$J/\psi \to$ hadrons
< 0.37	90		VANNUCCI	77	MRK1	$e^+e^- \to \pi^+\pi^-K^+K^-$

[86] Using B($f_2(1270) \to \pi\pi$) = $(84.8^{+2.4}_{-1.2})$%

[87] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \to \phi f_2(1270))/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (4.02 \pm 0.65 \pm 0.33) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi\eta(1405) \to \phi\eta\pi\pi)/\Gamma_{total}$ — Γ_{67}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<2.5	90	[88] FALVARD	88	DM2	$J/\psi \to$ hadrons

[88] Includes unknown branching fraction $\eta(1405) \to \eta\pi\pi$.

$\Gamma(\omega f_2'(1525))/\Gamma_{total}$ — Γ_{68}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<2.2	90	[89] VANNUCCI	77	MRK1	$e^+e^- \to \pi^+\pi^-\pi^0K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2.8	90	[89] FALVARD	88	DM2	$J/\psi \to$ hadrons

[89] Re-evaluated assuming B($f_2'(1525) \to K\overline{K}$) = 0.713.

$\Gamma(\Sigma(1385)^0\overline{\Lambda})/\Gamma_{total}$ — Γ_{69}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.2	90	HENRARD	87	DM2	e^+e^-

$\Gamma(\Delta(1232)^+\overline{p})/\Gamma_{total}$ — Γ_{70}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.1	90	HENRARD	87	DM2	e^+e^-

$\Gamma(\Theta(1540)\overline{\Theta}(1540) \to K^0_S pK^-\overline{n} + \text{c.c.})/\Gamma_{total}$ — Γ_{71}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	90	BAI	04G	BES2	e^+e^-

$\Gamma(\Theta(1540)K^-\overline{n} \to K^0_S pK^-\overline{n})/\Gamma_{total}$ — Γ_{72}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<2.1	90	BAI	04G	BES2	e^+e^-

$\Gamma(\Theta(1540)K^0_S\overline{p} \to K^0_S\overline{p}K^+n)/\Gamma_{total}$ — Γ_{73}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<1.6	90	BAI	04G	BES2	e^+e^-

$\Gamma(\overline{\Theta}(1540)K^+n \to K^0_S\overline{p}K^+n)/\Gamma_{total}$ — Γ_{74}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<5.6	90	BAI	04G	BES2	e^+e^-

$\Gamma(\overline{\Theta}(1540)K^0_S p \to K^0_S pK^-\overline{n})/\Gamma_{total}$ — Γ_{75}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	90	BAI	04G	BES2	e^+e^-

$\Gamma(\Sigma^0 \overline{\Lambda})/\Gamma_{total}$ Γ_{76}/Γ

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.9	90	HENRARD	87	DM2	$e^+ e^-$

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

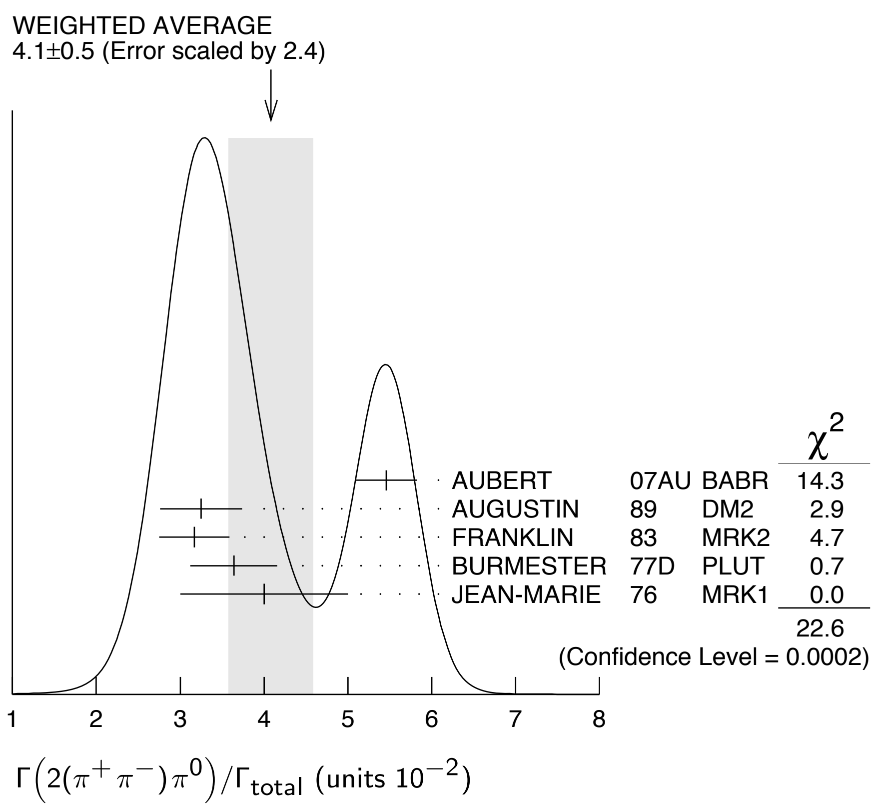
VALUE (units 10^{-6})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<6.4	90	ABLIKIM	05B	BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \phi\gamma\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<6.8	90	COFFMAN	88	MRK3	$e^+ e^- \rightarrow K^+ K^- \pi^0$

STABLE HADRONS

$\Gamma(2(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{78}/Γ

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
4.1 ±0.5 OUR AVERAGE		Error includes scale factor of 2.4. See the ideogram below.			
5.46±0.34±0.14	4990	[90] AUBERT	07AU	BABR	10.6 $e^+ e^- \rightarrow 2(\pi^+\pi^-)\pi^0\gamma$
3.25±0.49	46055	AUGUSTIN	89	DM2	$J/\psi \rightarrow 2(\pi^+\pi^-)\pi^0$
3.17±0.42	147	FRANKLIN	83	MRK2	$e^+ e^- \rightarrow$ hadrons
3.64±0.52	1500	BURMESTER	77D	PLUT	$e^+ e^-$
4 ±1	675	JEAN-MARIE	76	MRK1	$e^+ e^-$

[90] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow 2(\pi^+\pi^-)\pi^0)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+ e^-)] = 0.303 \pm 0.005 \pm 0.018$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.



$\Gamma(\omega\pi^+\pi^-)/\Gamma(2(\pi^+\pi^-)\pi^0)$ Γ_{12}/Γ_{78}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.3	[91] JEAN-MARIE	76	MRK1	e^+e^-

[91] Final state $(\pi^+\pi^-)\pi^0$ under the assumption that $\pi\pi$ is isospin 0.

$\Gamma(3(\pi^+\pi^-)\pi^0)/\Gamma_{\text{total}}$ Γ_{79}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.029±0.006 OUR AVERAGE					
0.028±0.009	11	FRANKLIN	83	MRK2	$e^+e^- \to$ hadrons
0.029±0.007	181	JEAN-MARIE	76	MRK1	e^+e^-

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
20.7 ±1.2 OUR AVERAGE		Error includes scale factor of 1.6. See the ideogram below.			
23.6 ±2.1 ±0.5	256	[92] AUBERT	07AU	BABR	10.6 $e^+e^- \to J/\psi\pi^+\pi^-\gamma$
21.8 ±1.9		[93,94] AUBERT,B	04N	BABR	10.6 $e^+e^- \to \pi^+\pi^-\pi^0\gamma$
21.84±0.05±2.01	220k	[94,95] BAI	04H	BES	e^+e^-
20.91±0.21±1.16		[94,96] BAI	04H	BES	e^+e^-
15 ±2	168	FRANKLIN	83	MRK2	e^+e^-

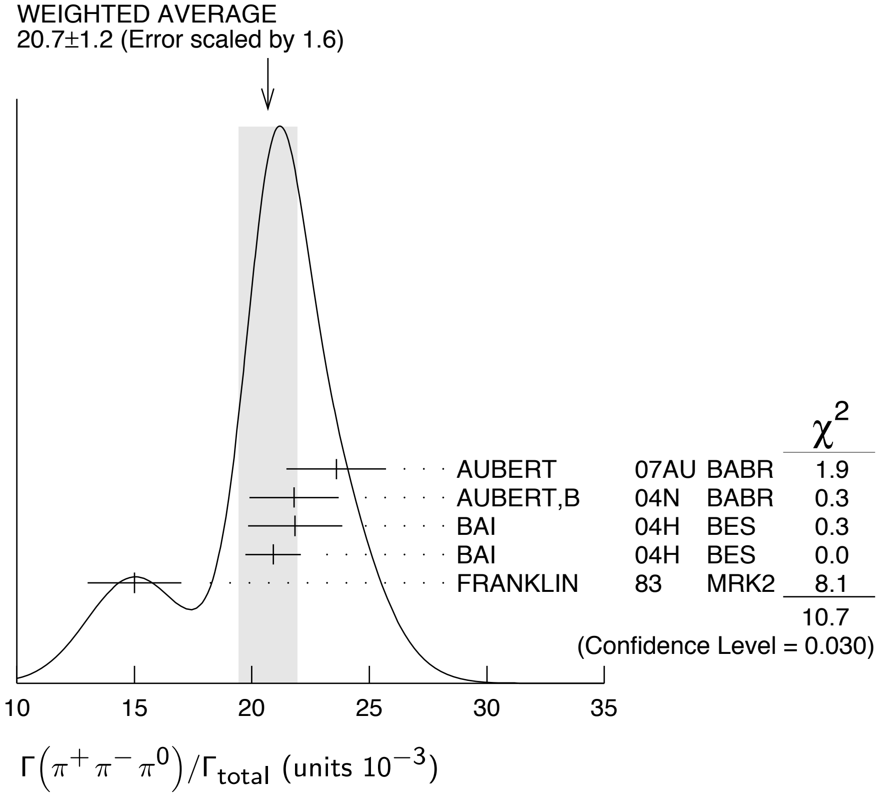
[92] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \to \pi^+\pi^-\pi^0)/\Gamma_{\text{total}}] \times [\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) \times \Gamma(\psi(2S) \to e^+e^-)/\Gamma_{\text{total}}] = (18.6\pm1.2\pm1.1)\times10^{-3}$ keV which we divide by our best value $\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) \times \Gamma(\psi(2S) \to e^+e^-)/\Gamma_{\text{total}} = 0.788 \pm 0.015$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[93] From the ratio of $\Gamma(e^+e^-)$ B$(\pi^+\pi^-\pi^0)$ and $\Gamma(e^+e^-)$ B$(\mu^+\mu^-)$ (AUBERT 04).

[94] Mostly $\rho\pi$, see also $\rho\pi$ subsection.

[95] From $J/\psi \to \pi^+\pi^-\pi^0$ events directly.

[96] Obtained comparing the rates for $\pi^+\pi^-\pi^0$ and $\mu^+\mu^-$, using J/ψ events produced via $\psi(2S) \to \pi^+\pi^- J/\psi$ and with B$(J/\psi \to \mu^+\mu^-) = 5.88 \pm 0.10\%$.



$\Gamma(\pi^+\pi^-\pi^0 K^+ K^-)/\Gamma_{total}$ Γ_{81}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
1.79±0.29 OUR AVERAGE	Error includes scale factor of 2.2.			
1.93±0.14±0.05	768	[97] AUBERT 07AU	BABR	10.6 $e^+ e^- \to K^+ K^- \pi^+ \pi^- \pi^0 \gamma$
1.2 ±0.3	309	VANNUCCI 77	MRK1	$e^+ e^-$

[97] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \to \pi^+\pi^-\pi^0 K^+ K^-)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+ e^-)] = 0.1070 \pm 0.0043 \pm 0.0064$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+ e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(4(\pi^+\pi^-)\pi^0)/\Gamma_{total}$ Γ_{82}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
90±30	13	JEAN-MARIE 76	MRK1	$e^+ e^-$

$\Gamma(\pi^+\pi^- K^+ K^-)/\Gamma_{total}$ Γ_{83}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
6.6±0.5 OUR AVERAGE				
6.5±0.4±0.2	1.6k	[98] AUBERT 07AK	BABR	10.6 $e^+ e^- \to \pi^+ \pi^- K^+ K^- \gamma$
7.2±2.3	205	VANNUCCI 77	MRK1	$e^+ e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
6.1±0.7±0.2	233	[99] AUBERT 05D	BABR	10.6 $e^+ e^- \to K^+ K^- \pi^+ \pi^- \gamma$

[98] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^- K^+K^-)/\Gamma_{\rm total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (36.3\pm1.3\pm2.1)\times10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[99] Superseded by AUBERT 07AK. AUBERT 05D reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^- K^+K^-)/\Gamma_{\rm total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (33.6 \pm 2.7 \pm 2.7) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\pi^+\pi^- K^+K^-\eta)/\Gamma_{\rm total}$ Γ_{84}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.84±0.28±0.05	73	[100] AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\eta\gamma$

[100] AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^- K^+K^-\eta)/\Gamma_{\rm total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (10.2\pm1.3\pm0.8)\times10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\pi^0\pi^0 K^+K^-)/\Gamma_{\rm total}$ Γ_{85}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.45±0.31±0.06	203 ± 16	[101] AUBERT	07AK	BABR	10.6 $e^+e^- \rightarrow \pi^0\pi^0 K^+K^-\gamma$

[101] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \pi^0\pi^0 K^+K^-)/\Gamma_{\rm total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (13.6\pm1.1\pm1.3)\times10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\eta\phi f_0(980) \rightarrow \eta\phi\pi^+\pi^-)/\Gamma_{\rm total}$ Γ_{86}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.23±0.75±0.73	52	ABLIKIM	08F	BES	$J/\psi \rightarrow \eta\phi f_0(980)$

$\Gamma(K\overline{K}\pi)/\Gamma_{\rm total}$ Γ_{87}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
61 ±10 OUR AVERAGE					
55.2±12.0	25	FRANKLIN	83	MRK2	$e^+e^- \rightarrow K^+K^-\pi^0$
78.0±21.0	126	VANNUCCI	77	MRK1	$e^+e^- \rightarrow K^0_S K^\pm\pi^\mp$

$\Gamma(2(\pi^+\pi^-))/\Gamma_{\rm total}$ Γ_{88}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.55±0.23 OUR AVERAGE					
3.53±0.12±0.29	1107	[102] ABLIKIM	05H	BES2	$e^+e^- \rightarrow \psi(2S) \rightarrow J/\psi\pi^+\pi^-$, $J/\psi \rightarrow 2(\pi^+\pi^-)$
3.51±0.34±0.09	270	[103] AUBERT	05D	BABR	10.6 $e^+e^- \rightarrow 2(\pi^+\pi^-)\gamma$
4.0 ±1.0	76	JEAN-MARIE	76	MRK1	e^+e^-

[102] Computed using B($J/\psi \to \mu^+\mu^-$) = 0.0588 ± 0.0010.
[103] AUBERT 05D reports [$\Gamma(J/\psi(1S) \to 2(\pi^+\pi^-))/\Gamma_{total}$] × [$\Gamma(J/\psi(1S) \to e^+e^-)$] = (19.5 ± 1.4 ± 1.3) × 10^{-3} keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(3(\pi^+\pi^-))/\Gamma_{total}$ Γ_{89}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
43 ± 4 OUR AVERAGE					
43.0± 2.9±2.8	496	[104] AUBERT	06D	BABR	10.6 $e^+e^- \to 3(\pi^+\pi^-)\gamma$
40 ±20	32	JEAN-MARIE	76	MRK1	e^+e^-

[104] Using $\Gamma(J/\psi \to e^+e^-)$ = 5.52 ± 0.14 ± 0.04 keV.

$\Gamma(2(\pi^+\pi^-\pi^0))/\Gamma_{total}$ Γ_{90}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.62±0.09±0.19	761	[105] AUBERT	06D	BABR	10.6 $e^+e^- \to 2(\pi^+\pi^-\pi^0)\gamma$

[105] Using $\Gamma(J/\psi \to e^+e^-)$ = 5.52 ± 0.14 ± 0.04 keV.

$\Gamma(2(\pi^+\pi^-)\eta)/\Gamma_{total}$ Γ_{91}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.29±0.24 OUR AVERAGE					
2.35±0.39±0.20	85	[106] AUBERT	07AU	BABR	10.6 $e^+e^- \to 2(\pi^+\pi^-)\eta\gamma$
2.26±0.08±0.27	4839	ABLIKIM	05C	BES2	$e^+e^- \to 2(\pi^+\pi^-)\eta$

[106] AUBERT 07AU quotes $\Gamma_{ee}^{J/\psi} \cdot$ B($J/\psi \to 2(\pi^+\pi^-)\eta$) ·B($\eta \to \gamma\gamma$) = 5.16 ± 0.85 ± 0.39 eV.

$\Gamma(3(\pi^+\pi^-)\eta)/\Gamma_{total}$ Γ_{92}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.24±0.96±1.11	616	ABLIKIM	05C	BES2	$e^+e^- \to 3(\pi^+\pi^-)\eta$

$\Gamma(p\overline{p})/\Gamma_{total}$ Γ_{93}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.17±0.07 OUR AVERAGE					
2.18±0.16±0.07	317	[107] WU	06	BELL	$B^+ \to p\overline{p}K^+$
2.26±0.01±0.14	63316	BAI	04E	BES2	$e^+e^- \to J/\psi$
1.97±0.22	99	BALDINI	98	FENI	e^+e^-
1.91±0.04±0.30		PALLIN	87	DM2	e^+e^-
2.16±0.07±0.15	1420	EATON	84	MRK2	e^+e^-
2.5 ±0.4	133	BRANDELIK	79C	DASP	e^+e^-
2.0 ±0.5		BESCH	78	BONA	e^+e^-
2.2 ±0.2	331	[108] PERUZZI	78	MRK1	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.0 ±0.3	48	ANTONELLI	93	SPEC	e^+e^-

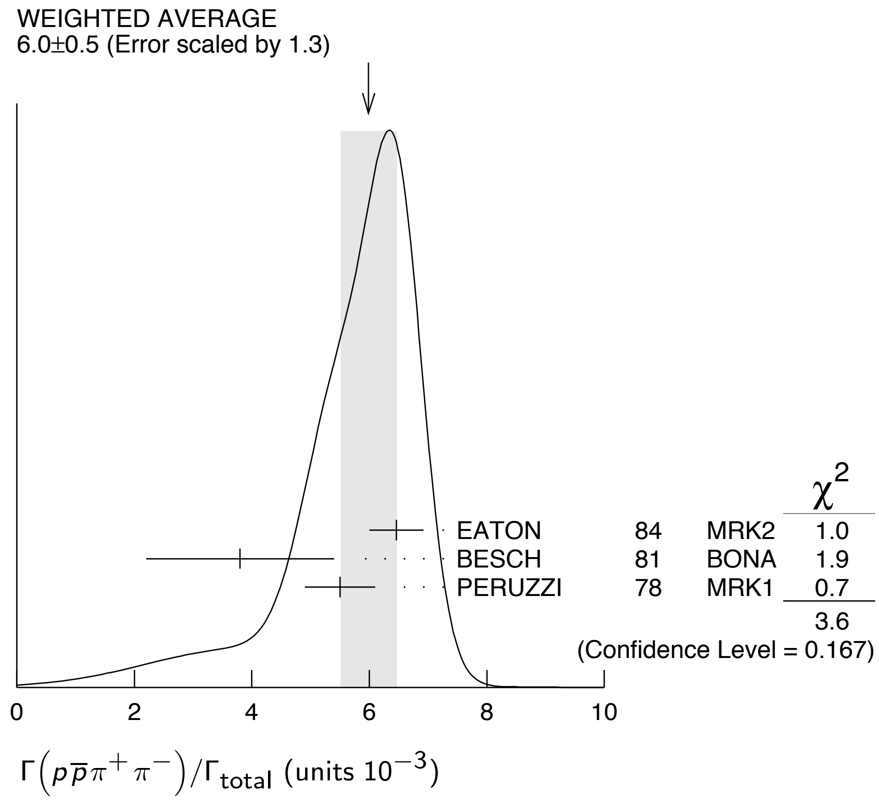
[107] WU 06 reports [$\Gamma(J/\psi(1S) \to p\overline{p})/\Gamma_{total}$] × [B($B^+ \to J/\psi(1S)K^+$)] = (2.21 ± 0.13 ± 0.10) × 10^{-6} which we divide by our best value B($B^+ \to J/\psi(1S)K^+$) = (1.014 ± 0.034) × 10^{-3}. Our first error is their experiment's error and our second error is the systematic error from using our best value.
[108] Assuming angular distribution (1+$\cos^2\theta$).

$\Gamma(p\overline{p}\pi^0)/\Gamma_{total}$ Γ_{94}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.19±0.08 OUR AVERAGE	Error includes scale factor of 1.1.				
1.33±0.02±0.11	11k	ABLIKIM	09B	BES2	e^+e^-
1.13±0.09±0.09	685	EATON	84	MRK2	e^+e^-
1.4 ±0.4		BRANDELIK	79C	DASP	e^+e^-
1.00±0.15	109	PERUZZI	78	MRK1	e^+e^-

$\Gamma(p\overline{p}\pi^+\pi^-)/\Gamma_{total}$ Γ_{95}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
6.0 ±0.5 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.				
6.46±0.17±0.43	1435	EATON	84	MRK2	e^+e^-
3.8 ±1.6	48	BESCH	81	BONA	e^+e^-
5.5 ±0.6	533	PERUZZI	78	MRK1	e^+e^-



$\Gamma(p\overline{p}\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{96}/Γ

Including $p\overline{p}\pi^+\pi^-\gamma$ and excluding ω, η, η'

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.3 ±0.9 OUR AVERAGE	Error includes scale factor of 1.9.				
3.36±0.65±0.28	364	EATON	84	MRK2	e^+e^-
1.6 ±0.6	39	PERUZZI	78	MRK1	e^+e^-

$\Gamma(p\overline{p}\eta)/\Gamma_{total}$ Γ_{97}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.00±0.12 OUR AVERAGE					
1.91±0.02±0.17	13k	[109] ABLIKIM	09	BES2	e^+e^-
2.03±0.13±0.15	826	EATON	84	MRK2	e^+e^-
2.5 ±1.2		BRANDELIK	79C	DASP	e^+e^-
2.3 ±0.4	197	PERUZZI	78	MRK1	e^+e^-

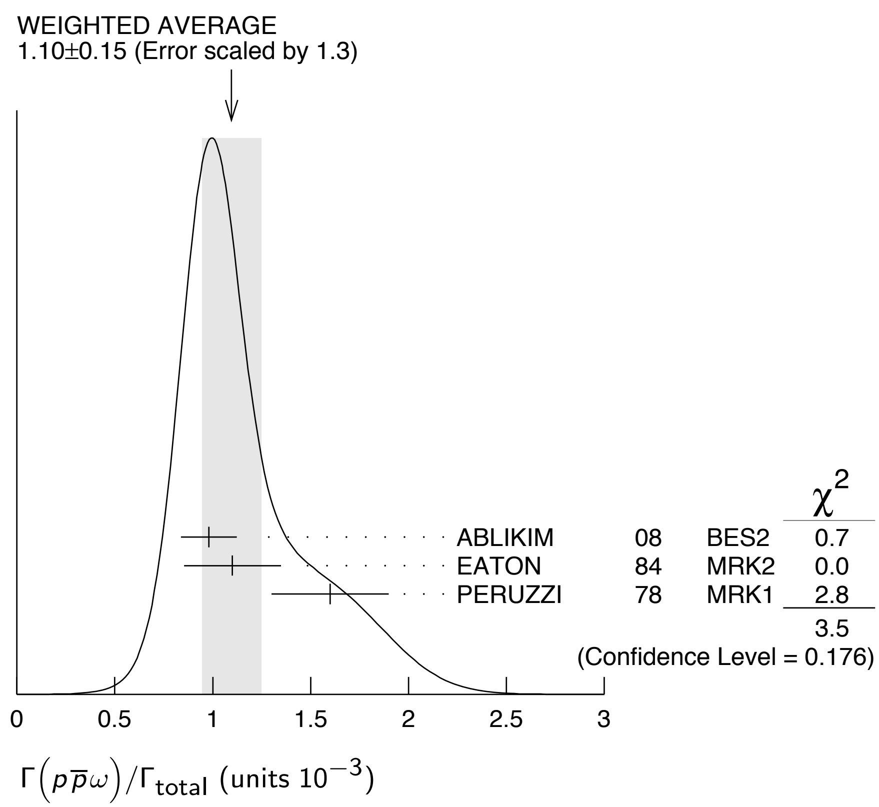
[109] From the combination of $p\overline{p}\eta \to p\overline{p}\gamma\gamma$ and $p\overline{p}\eta \to p\overline{p}\pi^+\pi^-\pi^0$ channels.

$\Gamma(p\overline{p}\rho)/\Gamma_{total}$ Γ_{98}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.31	90	EATON	84	MRK2	$e^+e^- \to$ hadronsγ

$\Gamma(p\overline{p}\omega)/\Gamma_{total}$ Γ_{99}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.10±0.15 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.				
0.98±0.03±0.14	2449	ABLIKIM	08	BES2	e^+e^-
1.10±0.17±0.18	486	EATON	84	MRK2	e^+e^-
1.6 ±0.3	77	PERUZZI	78	MRK1	e^+e^-



$\Gamma(p\overline{p}\eta'(958))/\Gamma_{total}$ — Γ_{100}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.21 ±0.04 OUR AVERAGE					
0.200±0.023±0.028	265 ± 31	[110] ABLIKIM	09	BES2	e^+e^-
0.68 ±0.23 ±0.17	19	EATON	84	MRK2	e^+e^-
1.8 ±0.6	19	PERUZZI	78	MRK1	e^+e^-

[110] From the combination of $p\overline{p}\eta' \rightarrow p\overline{p}\pi^+\pi^-\eta$ and $p\overline{p}\eta' \rightarrow p\overline{p}\gamma\rho^0$ channels.

$\Gamma(p\overline{p}\phi)/\Gamma_{total}$ — Γ_{101}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
0.45±0.13±0.07	FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons

$\Gamma(n\overline{n})/\Gamma_{total}$ — Γ_{102}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.22 ±0.04 OUR AVERAGE					
0.231±0.049	79	BALDINI	98	FENI	e^+e^-
0.18 ±0.09		BESCH	78	BONA	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.190±0.055	40	ANTONELLI	93	SPEC	e^+e^-

$\Gamma(n\overline{n}\pi^+\pi^-)/\Gamma_{total}$ — Γ_{103}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.8±3.6	5	BESCH	81	BONA	e^+e^-

$\Gamma(\Sigma^+\overline{\Sigma}^-)/\Gamma_{total}$ — Γ_{104}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.50±0.10±0.22	399	ABLIKIM	08O	BES2	$e^+e^- \rightarrow J/\psi$

$\Gamma(\Sigma^0\overline{\Sigma}^0)/\Gamma_{total}$ — Γ_{105}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.29±0.09 OUR AVERAGE					
1.15±0.24±0.03		[111] AUBERT	07BD	BABR	10.6 $e^+e^- \rightarrow \Sigma^0\overline{\Sigma}^0\gamma$
1.33±0.04±0.11	1779	ABLIKIM	06	BES2	$J/\psi \rightarrow \Sigma^0\overline{\Sigma}^0$
1.06±0.04±0.23	884 ± 30	PALLIN	87	DM2	$e^+e^- \rightarrow \Sigma^0\overline{\Sigma}^0$
1.58±0.16±0.25	90	EATON	84	MRK2	$e^+e^- \rightarrow \Sigma^0\overline{\Sigma}^0$
1.3 ±0.4	52	PERUZZI	78	MRK1	$e^+e^- \rightarrow \Sigma^0\overline{\Sigma}^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.4 ±2.6	3	BESCH	81	BONA	$e^+e^- \rightarrow \Sigma^+\overline{\Sigma}^-$

[111] AUBERT 07BD reports $[\Gamma(J/\psi(1S) \rightarrow \Sigma^0\overline{\Sigma}^0)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = (6.4 \pm 1.2 \pm 0.6) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(2(\pi^+\pi^-)K^+K^-)/\Gamma_{total}$ Γ_{106}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
47 ± 7 OUR AVERAGE		Error includes scale factor of 1.3.			
49.8 ± 4.2 ± 3.4	205	[112] AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow \omega K^+K^- 2(\pi^+\pi^-)\gamma$
31 ± 13	30	VANNUCCI	77	MRK1	e^+e^-

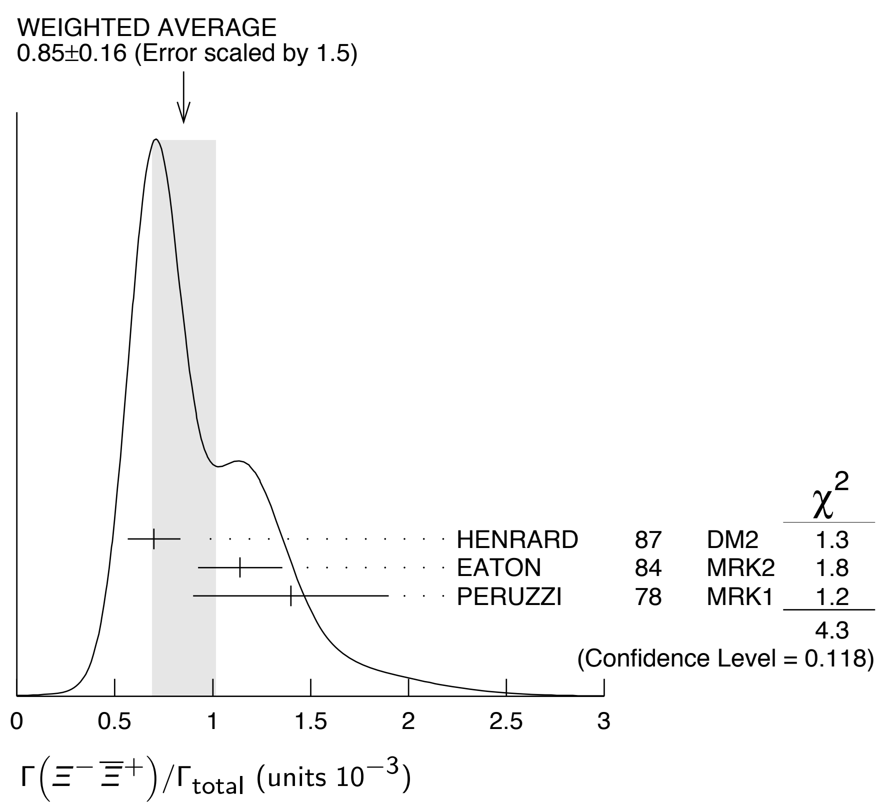
[112] Using $\Gamma(J/\psi \rightarrow e^+e^-) = 5.52 \pm 0.14 \pm 0.04$ keV.

$\Gamma(p\overline{n}\pi^-)/\Gamma_{total}$ Γ_{107}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.12±0.09 OUR AVERAGE					
2.36±0.02±0.21	59k	ABLIKIM	06K	BES2	$J/\psi \rightarrow p\pi^-\overline{n}$
2.47±0.02±0.24	55k	ABLIKIM	06K	BES2	$J/\psi \rightarrow \overline{p}\pi^+ n$
2.02±0.07±0.16	1288	EATON	84	MRK2	$e^+e^- \rightarrow p\pi^-$
1.93±0.07±0.16	1191	EATON	84	MRK2	$e^+e^- \rightarrow \overline{p}\pi^+$
1.7 ±0.7	32	BESCH	81	BONA	$e^+e^- \rightarrow p\pi^-$
1.6 ±1.2	5	BESCH	81	BONA	$e^+e^- \rightarrow \overline{p}\pi^+$
2.16±0.29	194	PERUZZI	78	MRK1	$e^+e^- \rightarrow p\pi^-$
2.04±0.27	204	PERUZZI	78	MRK1	$e^+e^- \rightarrow \overline{p}\pi^+$

$\Gamma(\Xi^-\overline{\Xi}^+)/\Gamma_{total}$ Γ_{111}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.85±0.16 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.			
0.70±0.06±0.12	132 ± 11	HENRARD	87	DM2	$e^+e^- \rightarrow \Xi^-\overline{\Xi}^+$
1.14±0.08±0.20	194	EATON	84	MRK2	$e^+e^- \rightarrow \Xi^-\overline{\Xi}^+$
1.4 ±0.5	51	PERUZZI	78	MRK1	$e^+e^- \rightarrow \Xi^-\overline{\Xi}^+$

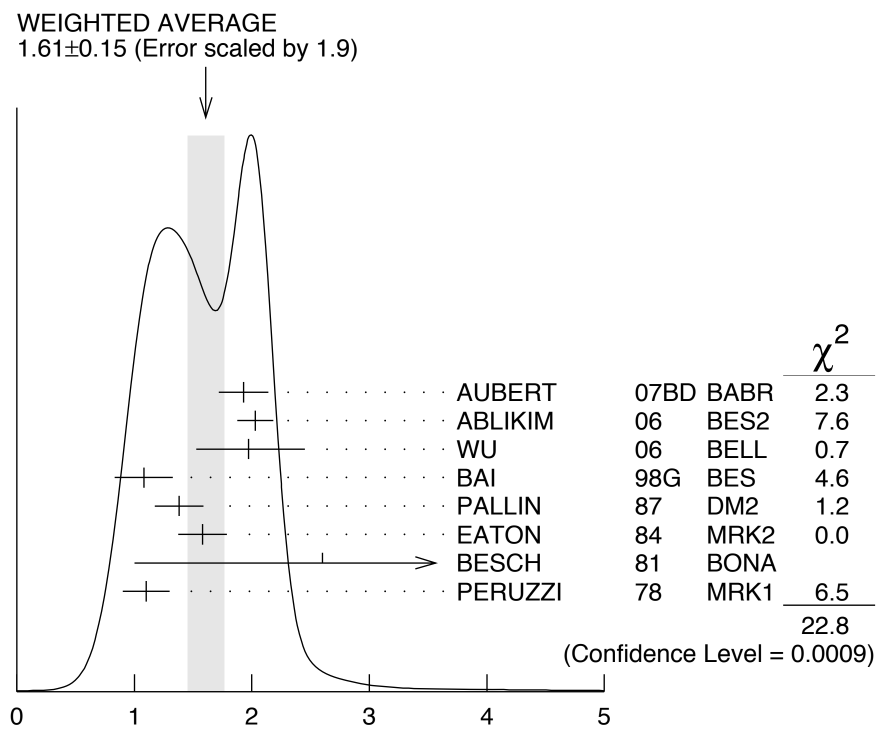


$\Gamma(\Lambda\overline{\Lambda})/\Gamma_{total}$ — Γ_{112}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.61±0.15 OUR AVERAGE	Error includes scale factor of 1.9. See the ideogram below.				
$1.93 \pm 0.21 \pm 0.05$		[113] AUBERT	07BD	BABR	$10.6\ e^+e^- \to \Lambda\overline{\Lambda}\gamma$
$2.03 \pm 0.03 \pm 0.15$	8887	ABLIKIM	06	BES2	$J/\psi \to \Lambda\overline{\Lambda}$
$2.0\ ^{+0.5}_{-0.4} \pm 0.1$	46	[114] WU	06	BELL	$B^+ \to \Lambda\overline{\Lambda}K^+$
$1.08 \pm 0.06 \pm 0.24$	631	BAI	98G	BES	e^+e^-
$1.38 \pm 0.05 \pm 0.20$	1847	PALLIN	87	DM2	e^+e^-
$1.58 \pm 0.08 \pm 0.19$	365	EATON	84	MRK2	e^+e^-
2.6 ± 1.6	5	BESCH	81	BONA	e^+e^-
1.1 ± 0.2	196	PERUZZI	78	MRK1	e^+e^-

[113] AUBERT 07BD reports $[\Gamma(J/\psi(1S) \to \Lambda\overline{\Lambda})/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (10.7 \pm 0.9 \pm 0.7) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[114] WU 06 reports $[\Gamma(J/\psi(1S) \to \Lambda\overline{\Lambda})/\Gamma_{total}] \times [B(B^+ \to J/\psi(1S)K^+)] = (2.00^{+0.34}_{-0.29} \pm 0.34) \times 10^{-6}$ which we divide by our best value $B(B^+ \to J/\psi(1S)K^+) = (1.014 \pm 0.034) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.



$\Gamma(\Lambda\overline{\Lambda})/\Gamma_{total}$ (units 10^{-3})

$\Gamma(\Lambda\overline{\Lambda})/\Gamma(p\overline{p})$ — Γ_{112}/Γ_{93}

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.90^{+0.15}_{-0.14} \pm 0.10}$	[115] WU	06	BELL	$B^+ \to p\overline{p}K^+$, $\Lambda\overline{\Lambda}K^+$

[115] Not independent of other $J/\psi \to \Lambda\overline{\Lambda}$, $p\overline{p}$ branching ratios reported by WU 06.

$\Gamma(\Lambda\overline{\Sigma}^-\pi^+ \text{(or c.c.)})/\Gamma_{total}$ — Γ_{113}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.83 ±0.07 OUR AVERAGE Error includes scale factor of 1.2.					
0.770±0.051±0.083	335	[116] ABLIKIM	07H	BES2	$e^+e^- \to \overline{\Lambda}\Sigma^+\pi^-$
0.747±0.056±0.076	254	[116] ABLIKIM	07H	BES2	$e^+e^- \to \Lambda\overline{\Sigma}^-\pi^+$
0.90 ±0.06 ±0.16	225 ± 15	HENRARD	87	DM2	$e^+e^- \to \overline{\Lambda}\Sigma^+\pi^-$
1.11 ±0.06 ±0.20	342 ± 18	HENRARD	87	DM2	$e^+e^- \to \Lambda\overline{\Sigma}^-\pi^+$
1.53 ±0.17 ±0.38	135	EATON	84	MRK2	$e^+e^- \to \overline{\Lambda}\Sigma^+\pi^-$
1.38 ±0.21 ±0.35	118	EATON	84	MRK2	$e^+e^- \to \Lambda\overline{\Sigma}^-\pi^+$

[116] Using B($\Lambda \to \pi^- p$) = 63.9% and B($\Sigma^+ \to \pi^0 p$) = 51.6%.

$\Gamma(pK^-\overline{\Lambda})/\Gamma_{total}$ — Γ_{114}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.89±0.07±0.14	307	EATON	84	MRK2	e^+e^-

$\Gamma(2(K^+K^-))/\Gamma_{total}$ — Γ_{115}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.76±0.09 OUR AVERAGE					
0.74±0.09±0.02	156 ± 15	[117] AUBERT	07AK	BABR	10.6 $e^+e^- \to 2(K^+K^-)\gamma$
1.4 $^{+0.5}_{-0.4}$ ±0.2	$11.0^{+4.3}_{-3.5}$	[118] HUANG	03	BELL	$B^+ \to 2(K^+K^-)\,K^+$
0.7 ±0.3		VANNUCCI	77	MRK1	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.72±0.17±0.02	38	[119] AUBERT	05D	BABR	10.6 $e^+e^- \to 2(K^+K^-)\gamma$

[117] AUBERT 07AK reports $[\Gamma(J/\psi(1S) \to 2(K^+K^-))/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (4.11 \pm 0.39 \pm 0.30) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[118] Using B($B^+ \to J/\psi K^+$) = $(1.01 \pm 0.05) \times 10^{-3}$.

[119] Superseded by AUBERT 07AK. AUBERT 05D reports $[\Gamma(J/\psi(1S) \to 2(K^+K^-))/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = (4.0 \pm 0.7 \pm 0.6) \times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(pK^-\overline{\Sigma}^0)/\Gamma_{total}$ — Γ_{116}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.29±0.06±0.05	90	EATON	84	MRK2	e^+e^-

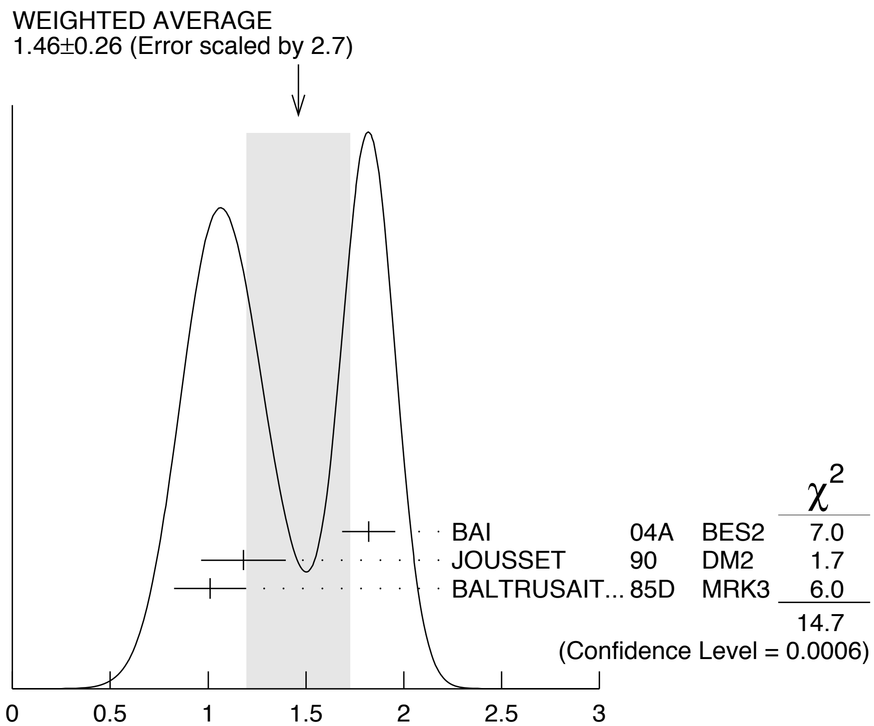
$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{117}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.37±0.31 OUR AVERAGE					
2.39±0.24±0.22	107	BALTRUSAIT...	85D	MRK3	e^+e^-
2.2 ±0.9	6	BRANDELIK	79C	DASP	e^+e^-

$\Gamma(K^0_S K^0_L)/\Gamma_{\text{total}}$ Γ_{118}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.46±0.26 OUR AVERAGE	Error includes scale factor of 2.7. See the ideogram below.				
1.82±0.04±0.13	2155 ± 45	[120] BAI	04A	BES2	$J/\psi \to K^0_S K^0_L \to \pi^+\pi^- X$
1.18±0.12±0.18		JOUSSET	90	DM2	$J/\psi \to$ hadrons
1.01±0.16±0.09	74	BALTRUSAIT...	85D	MRK3	e^+e^-

[120] Using B($K^0_S \to \pi^+\pi^-$) = 0.6868 ± 0.0027.



$\Gamma(K^0_S K^0_L)/\Gamma_{\text{total}}$ Γ_{118}/Γ

$\Gamma(\Lambda\overline{\Lambda}\eta)/\Gamma_{\text{total}}$ Γ_{119}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.62±0.60±0.44	44	[121] ABLIKIM	07H	BES2	$e^+e^- \to \psi(2S)$

[121] Using B($\Lambda \to \pi^- p$) = 63.9% and B($\eta \to \gamma\gamma$) = 39.4%.

$\Gamma(\Lambda\overline{\Lambda}\pi^0)/\Gamma_{\text{total}}$ Γ_{120}/Γ

VALUE (units 10^{-4})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.64	90		[122] ABLIKIM	07H	BES2	$e^+e^- \to \psi(2S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
2.3 ±0.7±0.8		11	BAI	98G	BES	e^+e^-
2.2 ±0.5±0.5		19 ± 4	HENRARD	87	DM2	e^+e^-

[122] Using B($\Lambda \to \pi^- p$) = 63.9%.

$\Gamma(\overline{\Lambda} n K^0_S + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{121}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.46±0.20±1.07	1058	[123] ABLIKIM	08C	BES2	$e^+e^- \to J/\psi$

[123] Using B($\overline{\Lambda} \to \overline{p}\pi^+$) = 63.9% and B($K^0_S \to \pi^+\pi^-$) = 69.2%.

$\Gamma(\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{122}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.47±0.23 OUR AVERAGE					
1.58±0.20±0.15	84	BALTRUSAIT...	85D	MRK3	e^+e^-
1.0 ±0.5	5	BRANDELIK	78B	DASP	e^+e^-
1.6 ±1.6	1	VANNUCCI	77	MRK1	e^+e^-

$\Gamma(\Lambda\overline{\Sigma} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{123}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.15	90	PERUZZI	78	MRK1	$e^+e^- \to \Lambda X$

$\Gamma(K^0_S K^0_S)/\Gamma_{\text{total}}$ Γ_{124}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<0.01	95	[124] BAI	04D	BES	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.052	90	[124] BALTRUSAIT...	85C	MRK3	e^+e^-

[124] Forbidden by *CP*.

RADIATIVE DECAYS

$\Gamma(3\gamma)/\Gamma_{\text{total}}$ Γ_{125}/Γ

VALUE (units 10^{-6})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
12±3±2		$24.2^{+7.2}_{-6.0}$	ADAMS	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<55	90		PARTRIDGE	80	CBAL	e^+e^-

$\Gamma(4\gamma)/\Gamma_{\text{total}}$ Γ_{126}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
<9	90	ADAMS	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$

$\Gamma(5\gamma)/\Gamma_{\text{total}}$ Γ_{127}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
<15	90	ADAMS	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$

$\Gamma(\gamma\eta_c(1S))/\Gamma_{\text{total}}$ Γ_{128}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.7 ±0.4 OUR AVERAGE Error includes scale factor of 1.6.					
2.07±0.32±0.03		[125] MITCHELL	09	CLEO	$e^+e^- \to \gamma X$
1.27±0.36		GAISER	86	CBAL	$J/\psi \to \gamma X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.79±0.20	273 ± 43	[126] AUBERT	06E	BABR	$B^\pm \to K^\pm X_{c\overline{c}}$
seen	16	BALTRUSAIT...	84	MRK3	$J/\psi \to 2\phi\gamma$

[125] MITCHELL 09 reports $(1.98 \pm 0.09 \pm 0.30) \times 10^{-2}$ from a measurement of $[\Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}] \times [B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)]$ assuming $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (35.04 \pm 0.07 \pm 0.77) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (33.6 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[126] Calculated by the authors using an average of $B(J/\psi \to \gamma\eta_c) \times B(\eta_c \to K\overline{K}\pi)$ from BALTRUSAITIS 86, BISELLO 91, BAI 04 and $B(\eta_c \to K\overline{K}\pi) = (8.5 \pm 1.8)\%$ from AUBERT 06E.

$\Gamma(\gamma\eta_c(1S) \to 3\gamma)/\Gamma_{total}$ — Γ_{129}/Γ

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.2^{+2.7}_{-1.1} \pm 0.3}$	$1.2^{+2.8}_{-1.1}$	ADAMS	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$

$\Gamma(\gamma\pi^+\pi^- 2\pi^0)/\Gamma_{total}$ — Γ_{130}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
8.3±0.2±3.1	[127] BALTRUSAIT...	86B	MRK3	$J/\psi \to 4\pi\gamma$

[127] 4π mass less than 2.0 GeV.

$\Gamma(\gamma\eta\pi\pi)/\Gamma_{total}$ — Γ_{131}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
6.1 ±1.0 OUR AVERAGE				
5.85±0.3±1.05	[128] EDWARDS	83B	CBAL	$J/\psi \to \eta\pi^+\pi^-$
7.8 ±1.2±2.4	[128] EDWARDS	83B	CBAL	$J/\psi \to \eta 2\pi^0$

[128] Broad enhancement at 1700 MeV.

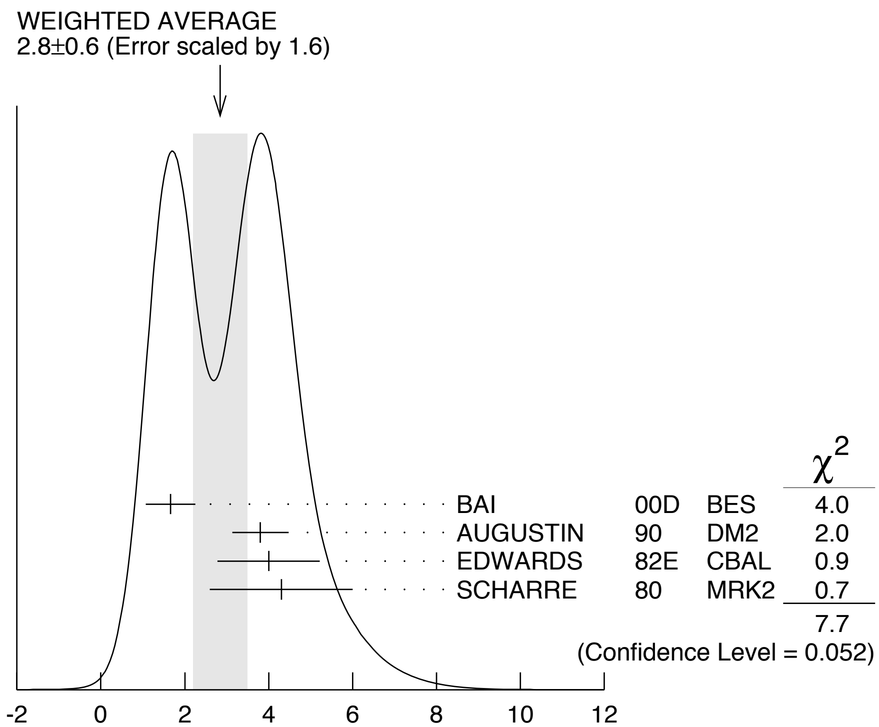
$\Gamma(\gamma\eta_2(1870) \to \gamma\eta\pi^+\pi^-)/\Gamma_{total}$ — Γ_{132}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
6.2±2.2±0.9	BAI	99	BES	$J/\psi \to \gamma\eta\pi^+\pi^-$

$\Gamma(\gamma\eta(1405/1475) \to \gamma K\overline{K}\pi)/\Gamma_{total}$ — Γ_{133}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.8 ±0.6 OUR AVERAGE Error includes scale factor of 1.6. See the ideogram below.				
1.66±0.1 ±0.58	[129,130] BAI	00D	BES	$J/\psi \to \gamma K^\pm K^0_S \pi^\mp$
3.8 ±0.3 ±0.6	[131] AUGUSTIN	90	DM2	$J/\psi \to \gamma K\overline{K}\pi$
4.0 ±0.7 ±1.0	[131] EDWARDS	82E	CBAL	$J/\psi \to K^+K^-\pi^0\gamma$
4.3 ±1.7	[131,132] SCHARRE	80	MRK2	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.78±0.21±0.33	[131,133,134] AUGUSTIN	92	DM2	$J/\psi \to \gamma K\overline{K}\pi$
0.83±0.13±0.18	[131,135,136] AUGUSTIN	92	DM2	$J/\psi \to \gamma K\overline{K}\pi$
$0.66^{+0.17}_{-0.16}{}^{+0.24}_{-0.15}$	[131,134,137] BAI	90C	MRK3	$J/\psi \to \gamma K^0_S K^\pm \pi^\mp$
$1.03^{+0.21}_{-0.18}{}^{+0.26}_{-0.19}$	[131,136,138] BAI	90C	MRK3	$J/\psi \to \gamma K^0_S K^\pm \pi^\mp$

[129] Interference with the $J/\psi(1S)$ radiative transition to the broad $K\overline{K}\pi$ pseudoscalar state around 1800 is $(0.15 \pm 0.01 \pm 0.05) \times 10^{-3}$.
[130] Interference with $J/\psi \to \gamma f_1(1420)$ is $(-0.03 \pm 0.01 \pm 0.01) \times 10^{-3}$.
[131] Includes unknown branching fraction $\eta(1405) \to K\overline{K}\pi$.
[132] Corrected for spin-zero hypothesis for $\eta(1405)$.
[133] From fit to the $a_0(980)\pi$ 0^{-+} partial wave.
[134] $a_0(980)\pi$ mode.
[135] From fit to the $K^*(892)K$ 0^{-+} partial wave.
[136] $K^* K$ mode.
[137] From $a_0(980)\pi$ final state.
[138] From $K^*(890)K$ final state.



$\Gamma\left(\gamma\eta(1405/1475) \to \gamma K\overline{K}\pi\right)/\Gamma_{\text{total}}$ (units 10^{-3})

$\Gamma\left(\gamma\eta(1405/1475) \to \gamma\gamma\rho^0\right)/\Gamma_{\text{total}}$ Γ_{134}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
0.78±0.20 OUR AVERAGE	Error includes scale factor of 1.8.			
1.07±0.17±0.11	[139] BAI	04J	BES2	$J/\psi \to \gamma\gamma\pi^+\pi^-$
0.64±0.12±0.07	[139] COFFMAN	90	MRK3	$J/\psi \to \gamma\gamma\pi^+\pi^-$

[139] Includes unknown branching fraction $\eta(1405) \to \gamma\rho^0$.

$\Gamma\left(\gamma\eta(1405/1475) \to \gamma\eta\pi^+\pi^-\right)/\Gamma_{\text{total}}$ Γ_{135}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.0 ±0.5 OUR AVERAGE					
2.6 ±0.7 ±0.4		BAI	99	BES	$J/\psi \to \gamma\eta\pi^+\pi^-$
3.38±0.33±0.64		[140] BOLTON	92B	MRK3	$J/\psi \to \gamma\eta\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
7.0 ±0.6 ±1.1	261	[141] AUGUSTIN	90	DM2	$J/\psi \to \gamma\eta\pi^+\pi^-$

[140] Via $a_0(980)\pi$.
[141] Includes unknown branching fraction to $\eta\pi^+\pi^-$.

$\Gamma(\gamma\eta(1405/1475) \to \gamma\gamma\phi)/\Gamma_{total}$ Γ_{136}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<0.82	95	BAI	04J	BES2	$J/\psi \to \gamma\gamma K^+ K^-$

$\Gamma(\gamma\rho\rho)/\Gamma_{total}$ Γ_{137}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
4.5 ±0.8 OUR AVERAGE					
4.7 ±0.3 ±0.9		[142] BALTRUSAIT...	86B	MRK3	$J/\psi \to 4\pi\gamma$
3.75±1.05±1.20		[143] BURKE	82	MRK2	$J/\psi \to 4\pi\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.09	90	[144] BISELLO	89B		$J/\psi \to 4\pi\gamma$

[142] 4π mass less than 2.0 GeV.
[143] 4π mass less than 2.0 GeV. We have multiplied $2\rho^0$ measurement by 3 to obtain 2ρ.
[144] 4π mass in the range 2.0–25 GeV.

$\Gamma(\gamma\rho\omega)/\Gamma_{total}$ Γ_{138}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<5.4	90	ABLIKIM	08A	BES2	$e^+e^- \to J/\psi$

$\Gamma(\gamma\rho\phi)/\Gamma_{total}$ Γ_{139}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<8.8	90	ABLIKIM	08A	BES2	$e^+e^- \to J/\psi$

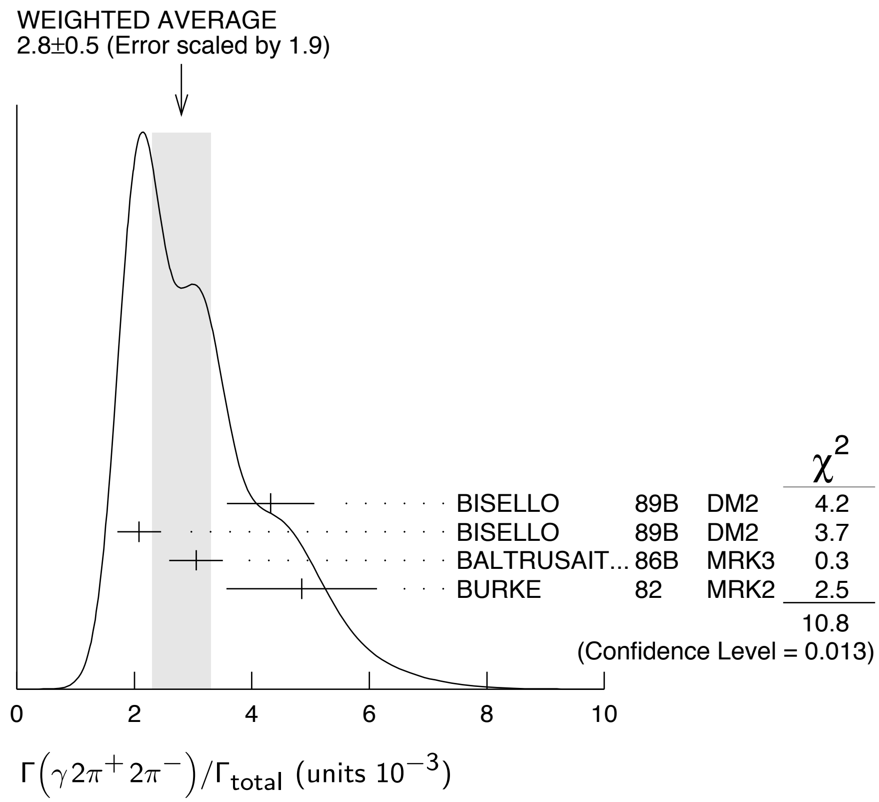
$\Gamma(\gamma\eta'(958))/\Gamma_{total}$ Γ_{140}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.28±0.15 OUR AVERAGE					
5.24±0.12±0.11		PEDLAR	09	CLE3	$J/\psi \to \eta'\gamma$
5.55±0.44	35k	ABLIKIM	06E	BES2	$J/\psi \to \eta'\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.50±0.14±0.53		BOLTON	92B	MRK3	$J/\psi \to \gamma\pi^+\pi^-\eta$, $\eta \to \gamma\gamma$
4.30±0.31±0.71		BOLTON	92B	MRK3	$J/\psi \to \gamma\pi^+\pi^-\eta$, $\eta \to \pi^+\pi^-\pi^0$
4.04±0.16±0.85	622	AUGUSTIN	90	DM2	$J/\psi \to \gamma\eta\pi^+\pi^-$
4.39±0.09±0.66	2420	AUGUSTIN	90	DM2	$J/\psi \to \gamma\gamma\pi^+\pi^-$
4.1 ±0.3 ±0.6		BLOOM	83	CBAL	$e^+e^- \to 3\gamma +$ hadrons
2.9 ±1.1	6	BRANDELIK	79C	DASP	$e^+e^- \to 3\gamma$
2.4 ±0.7	57	BARTEL	76	CNTR	$e^+e^- \to 2\gamma\rho$

$\Gamma(\gamma 2\pi^+ 2\pi^-)/\Gamma_{total}$ Γ_{141}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.8 ±0.5 OUR AVERAGE	Error includes scale factor of 1.9. See the ideogram below.			
4.32±0.14±0.73	[145] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$
2.08±0.13±0.35	[146] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$
3.05±0.08±0.45	[146] BALTRUSAIT...	86B	MRK3	$J/\psi \to 4\pi\gamma$
4.85±0.45±1.20	[147] BURKE	82	MRK2	e^+e^-

[145] 4π mass less than 3.0 GeV.
[146] 4π mass less than 2.0 GeV.
[147] 4π mass less than 2.5 GeV.



$\Gamma\left(\gamma f_2(1270) f_2(1270)\right)/\Gamma_{\rm total}$ Γ_{142}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
9.5±0.7±1.6	646 ± 45	ABLIKIM	04M	BES	$J/\psi \to \gamma 2\pi^+ 2\pi^-$

$\Gamma\left(\gamma f_2(1270) f_2(1270) (\text{non resonant})\right)/\Gamma_{\rm total}$ Γ_{143}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
8.2±0.8±1.7	[148] ABLIKIM	04M	BES	$J/\psi \to \gamma 2\pi^+ 2\pi^-$

[148] Subtracting contribution from intermediate $\eta_c(1S)$ decays.

$\Gamma\left(\gamma K^+ K^- \pi^+ \pi^-\right)/\Gamma_{\rm total}$ Γ_{144}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.1±0.1±0.6	1516	BAI	00B	BES	$J/\psi \to \gamma K^+ K^0 \pi^+ \pi^-$

$\Gamma\left(\gamma f_4(2050)\right)/\Gamma_{\rm total}$ Γ_{145}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.7±0.5±0.5	[149] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma \pi^+ \pi^-$

[149] Assuming branching fraction $f_4(2050) \to \pi\pi/$ total $= 0.167$.

$\Gamma(\gamma\omega\omega)/\Gamma_{total}$ Γ_{146}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.61±0.33 OUR AVERAGE					
6.0 ±4.8 ±1.8		ABLIKIM	08A	BES2	$J/\psi \to \gamma\omega\pi^+\pi^-$
1.41±0.2 ±0.42	120 ± 17	BISELLO	87	SPEC	e^+e^-, hadronsγ
1.76±0.09±0.45		BALTRUSAIT...	85C	MRK3	$e^+e^- \to$ hadronsγ

$\Gamma(\gamma\eta(1405/1475) \to \gamma\rho^0\rho^0)/\Gamma_{total}$ Γ_{147}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
1.7 ±0.4 OUR AVERAGE Error includes scale factor of 1.3.				
2.1 ±0.4	BUGG	95	MRK3	$J/\psi \to \gamma\pi^+\pi^-\pi^+\pi^-$
1.36±0.38	[150,151] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$

[150] Estimated by us from various fits.
[151] Includes unknown branching fraction to $\rho^0\rho^0$.

$\Gamma(\gamma f_2(1270))/\Gamma_{total}$ Γ_{148}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.43±0.11 OUR AVERAGE					
$1.62\pm0.26^{+0.02}_{-0.05}$		[152] ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$
$1.42\pm0.21^{+0.02}_{-0.04}$		[153] ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^0\pi^0$
1.33±0.05±0.20		[154] AUGUSTIN	87	DM2	$J/\psi \to \gamma\pi^+\pi^-$
1.36±0.09±0.23		[154] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma\pi^+\pi^-$
1.48±0.25±0.30	178	EDWARDS	82B	CBAL	$e^+e^- \to 2\pi^0\gamma$
2.0 ±0.7	35	ALEXANDER	78	PLUT	e^+e^-
1.2 ±0.6	30	[155] BRANDELIK	78B	DASP	$e^+e^- \to \pi^+\pi^-\gamma$

[152] ABLIKIM 06V reports $[\Gamma(J/\psi(1S) \to \gamma f_2(1270))/\Gamma_{total}] \times [B(f_2(1270) \to \pi\pi)] = (1.371 \pm 0.010 \pm 0.222) \times 10^{-3}$ which we divide by our best value $B(f_2(1270) \to \pi\pi) = (84.8^{+2.4}_{-1.2}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
[153] ABLIKIM 06V reports $[\Gamma(J/\psi(1S) \to \gamma f_2(1270))/\Gamma_{total}] \times [B(f_2(1270) \to \pi\pi)] = (1.200 \pm 0.027 \pm 0.174) \times 10^{-3}$ which we divide by our best value $B(f_2(1270) \to \pi\pi) = (84.8^{+2.4}_{-1.2}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
[154] Estimated using $B(f_2(1270) \to \pi\pi)=0.843 \pm 0.012$. The errors do not contain the uncertainty in the $f_2(1270)$ decay.
[155] Restated by us to take account of spread of E1, M2, E3 transitions.

$\Gamma(\gamma f_0(1710) \to \gamma K\overline{K})/\Gamma_{total}$ Γ_{149}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
$8.5^{+1.2}_{-0.9}$ OUR AVERAGE Error includes scale factor of 1.2.					
$9.62\pm029\ ^{+3.51}_{-1.86}$		[156] BAI	03G	BES	$J/\psi \to \gamma K\overline{K}$
$5.0\ \pm\ 0.8^{+1.8}_{-0.4}$		[157,158] BAI	96C	BES	$J/\psi \to \gamma K^+K^-$
9.2 ± 1.4±1.4		[158] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+K^-$
10.4 ± 1.2±1.6		[158] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^0_S K^0_S$
9.6 ± 1.2±1.8		[158] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+K^-$

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

$1.6 \pm 0.2^{+0.6}_{-0.2}$		[158,159] BAI	96C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
< 0.8	90	[160] BISELLO	89B		$J/\psi \rightarrow 4\pi\gamma$
$1.6 \pm 0.4 \pm 0.3$		[161] BALTRUSAIT...87		MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-$
3.8 ± 1.6		[162] EDWARDS	82D	CBAL	$e^+ e^- \rightarrow \eta\eta\gamma$

[156] Includes unknown branching ratio to $K^+ K^-$ or $K^0_S K^0_S$.
[157] Assuming $J^P = 2^+$ for $f_0(1710)$.
[158] Includes unknown branching fraction to $K^+ K^-$ or $K^0_S K^0_S$. We have multiplied $K^+ K^-$ measurement by 2, and $K^0_S K^0_S$ by 4 to obtain $K\overline{K}$ result.
[159] Assuming $J^P = 0^+$ for $f_0(1710)$.
[160] Includes unknown branching fraction to $\rho^0 \rho^0$.
[161] Includes unknown branching fraction to $\pi^+\pi^-$.
[162] Includes unknown branching fraction to $\eta\eta$.

$\Gamma(\gamma f_0(1710) \rightarrow \gamma\pi\pi)/\Gamma_{total}$ Γ_{150}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.0 ±1.0 OUR AVERAGE				
$3.96 \pm 0.06 \pm 1.12$	[163] ABLIKIM	06V	BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
$3.99 \pm 0.15 \pm 2.64$	[163] ABLIKIM	06V	BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma\pi^0\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$2.5 \pm 1.6 \pm 0.8$	BAI	98H	BES	$J/\psi \rightarrow \gamma\pi^0\pi^0$

[163] Including unknown branching fraction to $\pi\pi$.

$\Gamma(\gamma f_0(1710) \rightarrow \gamma\omega\omega)/\Gamma_{total}$ Γ_{151}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.31±0.06±0.08	180	ABLIKIM	06H	BES	$J/\psi \rightarrow \gamma\omega\omega$

$\Gamma(\gamma\eta)/\Gamma_{total}$ Γ_{152}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.104±0.034 OUR AVERAGE					
$1.101 \pm 0.029 \pm 0.022$		PEDLAR	09	CLE3	$J/\psi \rightarrow \eta\gamma$
1.123 ± 0.089	11k	ABLIKIM	06E	BES2	$J/\psi \rightarrow \eta\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.88 \pm 0.08 \pm 0.11$		BLOOM	83	CBAL	$e^+ e^-$
0.82 ± 0.10		BRANDELIK	79C	DASP	$e^+ e^-$
1.3 ± 0.4	21	BARTEL	77	CNTR	$e^+ e^-$

$\Gamma(\gamma f_1(1420) \rightarrow \gamma K\overline{K}\pi)/\Gamma_{total}$ Γ_{153}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.79±0.13 OUR AVERAGE				
$0.68 \pm 0.04 \pm 0.24$	BAI	00D	BES	$J/\psi \rightarrow \gamma K^\pm K^0_S \pi^\mp$
$0.76 \pm 0.15 \pm 0.21$	[164,165] AUGUSTIN	92	DM2	$J/\psi \rightarrow \gamma K\overline{K}\pi$
$0.87 \pm 0.14^{+0.14}_{-0.11}$	[164] BAI	90C	MRK3	$J/\psi \rightarrow \gamma K^0_S K^\pm \pi^\mp$

[164] Included unknown branching fraction $f_1(1420) \rightarrow K\overline{K}\pi$.
[165] From fit to the $K^*(892) K\ 1^{++}$ partial wave.

$\Gamma(\gamma f_1(1285))/\Gamma_{total}$ Γ_{154}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.61 ±0.08 OUR AVERAGE				
0.69 ±0.16 ±0.20	[166] BAI	04J	BES2	$J/\psi \to \gamma\gamma\rho^0$
0.61 ±0.04 ±0.21	[167] BAI	00D	BES	$J/\psi \to \gamma K^{\pm} K^0_S \pi^{\mp}$
0.45 ±0.09 ±0.17	[168] BAI	99	BES	$J/\psi \to \gamma\eta\pi^+\pi^-$
0.625±0.063±0.103	[169] BOLTON	92	MRK3	$J/\psi \to \gamma f_1(1285)$
0.70 ±0.08 ±0.16	[170] BOLTON	92B	MRK3	$J/\psi \to \gamma\eta\pi^+\pi^-$

[166] Assuming $B(f_1(1285) \to \rho^0\gamma) = 0.055 \pm 0.013$.
[167] Assuming $\Gamma(f_1(1285) \to K\overline{K}\pi)/\Gamma_{total} = 0.090 \pm 0.004$.
[168] Assuming $\Gamma(f_1(1285) \to \eta\pi\pi)/\Gamma_{total} = 0.5 \pm 0.18$.
[169] Obtained summing the sequential decay channels
$B(J/\psi \to \gamma f_1(1285), f_1(1285) \to \pi\pi\pi\pi) = (1.44 \pm 0.39 \pm 0.27) \times 10^{-4}$;
$B(J/\psi \to \gamma f_1(1285), f_1(1285) \to a_0(980)\pi, a_0(980) \to \eta\pi) = (3.90 \pm 0.42 \pm 0.87) \times 10^{-4}$;
$B(J/\psi \to \gamma f_1(1285), f_1(1285) \to a_0(980)\pi, a_0(980) \to K\overline{K}) = (0.66 \pm 0.26 \pm 0.29) \times 10^{-4}$;
$B(J/\psi \to \gamma f_1(1285), f_1(1285) \to \gamma\rho^0) = (0.25 \pm 0.07 \pm 0.03) \times 10^{-4}$.
[170] Using $B(f_1(1285) \to a_0(980)\pi) = 0.37$, and including unknown branching ratio for $a_0(980) \to \eta\pi$.

$\Gamma(\gamma f_1(1510) \to \gamma\eta\pi^+\pi^-)/\Gamma_{total}$ Γ_{155}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
4.5±1.0±0.7	BAI	99	BES	$J/\psi \to \gamma\eta\pi^+\pi^-$

$\Gamma(\gamma f'_2(1525))/\Gamma_{total}$ Γ_{156}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
4.5 $^{+0.7}_{-0.4}$ OUR AVERAGE						
3.85±0.17 $^{+1.91}_{-0.73}$			[171] BAI	03G	BES	$J/\psi \to \gamma K\overline{K}$
3.6 ±0.4 $^{+1.4}_{-0.4}$			[171] BAI	96C	BES	$J/\psi \to \gamma K^+K^-$
5.6 ±1.4 ±0.9			[171] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+K^-$
4.5 ±0.4 ±0.9			[171] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^0_S K^0_S$
6.8 ±1.6 ±1.4			[171] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<3.4	90	4	[172] BRANDELIK	79C	DASP	$e^+e^- \to \pi^+\pi^-\gamma$
<2.3	90	3	ALEXANDER	78	PLUT	$e^+e^- \to K^+K^-\gamma$

[171] Using $B(f'_2(1525) \to K\overline{K}) = 0.888$.
[172] Assuming isotropic production and decay of the $f'_2(1525)$ and isospin.

$\Gamma(\gamma f_2(1640) \to \gamma\omega\omega)/\Gamma_{total}$ Γ_{157}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.28±0.05±0.17	141	ABLIKIM	06H	BES	$J/\psi \to \gamma\omega\omega$

$\Gamma(\gamma f_2(1910) \to \gamma\omega\omega)/\Gamma_{\text{total}}$ Γ_{158}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.20±0.04±0.13	151	ABLIKIM	06H	BES	$J/\psi \to \gamma\omega\omega$

$\Gamma(\gamma f_2(1950) \to \gamma K^*(892)\overline{K}^*(892))/\Gamma_{\text{total}}$ Γ_{159}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.7±0.1 ±0.2	BAI	00B	BES	$J/\psi \to \gamma K^+ K^0 \pi^+ \pi^-$

$\Gamma(\gamma K^*(892)\overline{K}^*(892))/\Gamma_{\text{total}}$ Γ_{160}/Γ

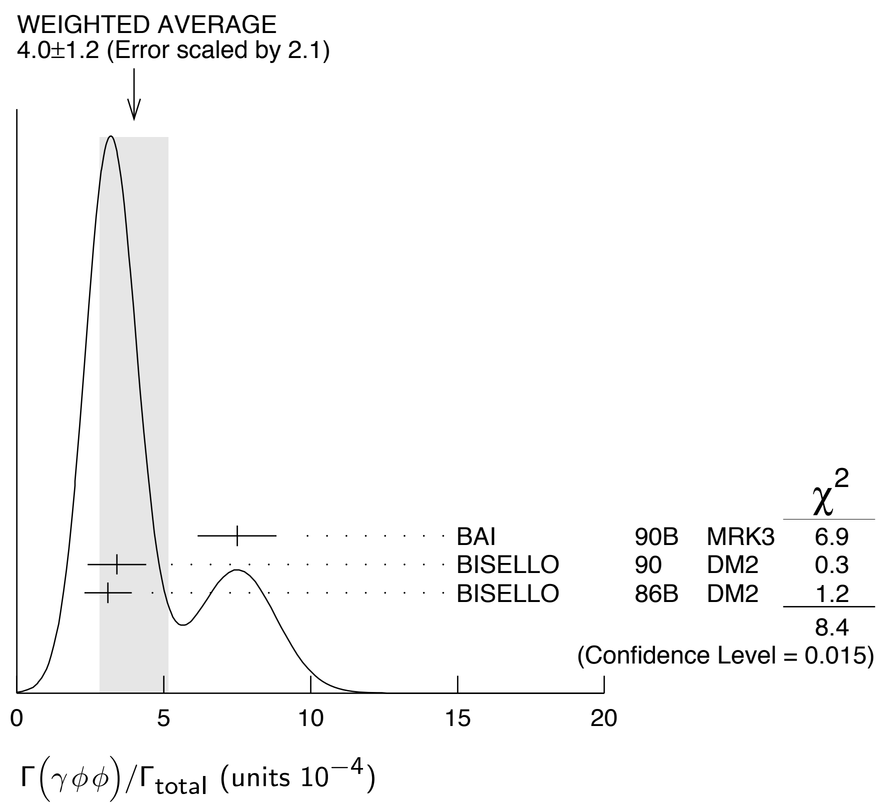
VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.0±0.3±1.3	320	[173] BAI	00B	BES	$J/\psi \to \gamma K^+ K^0 \pi^+ \pi^-$

[173] Summed over all charges.

$\Gamma(\gamma\phi\phi)/\Gamma_{\text{total}}$ Γ_{161}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.0±1.2 OUR AVERAGE	Error includes scale factor of 2.1. See the ideogram below.				
7.5±0.6±1.2	168	BAI	90B	MRK3	$J/\psi \to \gamma 4K$
3.4±0.8±0.6	33 ± 7	[174] BISELLO	90	DM2	$J/\psi \to \gamma K^+ K^- K^0_S K^0_L$
3.1±0.7±0.4		[174] BISELLO	86B	DM2	$J/\psi \to \gamma K^+ K^- K^+ K^-$

[174] $\phi\phi$ mass less than 2.9 GeV, η_c excluded.



$\Gamma(\gamma p\overline{p})/\Gamma_{total}$ — Γ_{162}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.38±0.07±0.07		49	EATON	84	MRK2	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.11	90		PERUZZI	78	MRK1	e^+e^-

$\Gamma(\gamma\eta(2225))/\Gamma_{total}$ — Γ_{163}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.33±0.05 OUR AVERAGE					
0.44±0.04±0.08	196 ± 19	[175] ABLIKIM	08I	BES	$J/\psi \to \gamma K^+K^-K^0_S K^0_L$
0.33±0.08±0.05		[175] BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^+K^-$
0.27±0.06±0.06		[175] BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^0_S K^0_L$
$0.24^{+0.15}_{-0.10}$		[176,177] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$

[175] Includes unknown branching fraction to $\phi\phi$.
[176] Estimated by us from various fits.
[177] Includes unknown branching fraction to $\rho^0\rho^0$.

$\Gamma(\gamma\eta(1760) \to \gamma\rho^0\rho^0)/\Gamma_{total}$ — Γ_{164}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.13±0.09	[178,179] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$

[178] Estimated by us from various fits.
[179] Includes unknown branching fraction to $\rho^0\rho^0$.

$\Gamma(\gamma\eta(1760) \to \gamma\omega\omega)/\Gamma_{total}$ — Γ_{165}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.98±0.08±0.32	1045	ABLIKIM	06H	BES	$J/\psi \to \gamma\omega\omega$

$\Gamma(\gamma X(1835))/\Gamma_{total}$ — Γ_{166}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
22.0±4.0±4.0	264	[180] ABLIKIM	05R	BES2	$J/\psi \to \gamma\pi^+\pi^-\eta'$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
26.1±2.7±6.5	95	[181] ABLIKIM	06J	BES2	$J/\psi \to \gamma\omega\phi$
$7.0\pm0.4^{+1.9}_{-0.8}$		[182] BAI	03F	BES2	$J/\psi \to \gamma p\overline{p}$

[180] Including the unknown branching fraction to $\pi^+\pi^-\eta'$.
[181] Including the unknown branching ratio to $\omega\phi$.
[182] Including the unknown branching fraction to $p\overline{p}$. The fit including final state interaction effects according to SIBIRTSEV 05A gives close results.

$\Gamma(\gamma(K\overline{K}\pi)[J^{PC}=0^{-+}])/\Gamma_{total}$ — Γ_{167}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.7 ±0.4 OUR AVERAGE Error includes scale factor of 2.1.				
0.58±0.03±0.20	[183] BAI	00D	BES	$J/\psi \to \gamma K^\pm K^0_S \pi^\mp$
2.1 ±0.1 ±0.7	[184] BAI	00D	BES	$J/\psi \to \gamma K^\pm K^0_S \pi^\mp$

[183] For a broad structure around 1800 MeV.
[184] For a broad structure around 2040 MeV.

$\Gamma(\gamma\pi^0)/\Gamma_{total}$ Γ_{168}/Γ

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{3.49^{+0.33}_{-0.30}}$ **OUR AVERAGE**					
$3.63\pm0.36\pm0.13$		PEDLAR	09	CLE3	$J/\psi \rightarrow \pi^0\gamma$
$3.13^{+0.65}_{-0.47}$	586	ABLIKIM	06E	BES2	$J/\psi \rightarrow \pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$3.6 \pm1.1 \pm0.7$		BLOOM	83	CBAL	e^+e^-
7.3 ± 4.7	10	BRANDELIK	79C	DASP	e^+e^-

$\Gamma(\gamma p\overline{p}\pi^+\pi^-)/\Gamma_{total}$ Γ_{169}/Γ

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.79	90	EATON	84	MRK2	e^+e^-

$\Gamma(\gamma\Lambda\overline{\Lambda})/\Gamma_{total}$ Γ_{170}/Γ

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.13	90	HENRARD	87	DM2	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.16	90	BAI	98G	BES	e^+e^-

$\Gamma(\gamma f_0(2200))/\Gamma_{total}$ Γ_{171}/Γ

VALUE (units 10^{-4})	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.5	[185] AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^0_S K^0_S$

[185] Includes unknown branching fraction to $K^0_S K^0_S$.

$\Gamma(\gamma f_J(2220))/\Gamma_{total}$ Γ_{172}/Γ

VALUE (units 10^{-5})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
>250	99.9		[186] HASAN	96	SPEC	$\overline{p}p \rightarrow \pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
>300			[187] BAI	96B	BES	$e^+e^- \rightarrow \gamma\overline{p}p,\ K\overline{K}$
< 2.3	95		[188] AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^+K^-$
< 1.6	95		[188] AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^0_S K^0_S$
$12.4^{+6.4}_{-5.2}\pm2.8$		23	[188] BALTRUSAIT...	86D	MRK3	$J/\psi \rightarrow \gamma K^0_S K^0_S$
$8.4^{+3.4}_{-2.8}\pm1.6$		93	[188] BALTRUSAIT...	86D	MRK3	$J/\psi \rightarrow \gamma K^+K^-$

[186] Using BAI 96B.
[187] Using BARNES 93.
[188] Includes unknown branching fraction to K^+K^- or $K^0_S K^0_S$.

$\Gamma(\gamma f_J(2220) \rightarrow \gamma\pi\pi)/\Gamma_{total}$ Γ_{173}/Γ

VALUE (units 10^{-4})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.84±0.26±0.30	BAI	96B	BES	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.4 \pm0.8 \pm0.4$	BAI	98H	BES	$J/\psi \rightarrow \gamma\pi^0\pi^0$

$\Gamma(\gamma f_J(2220) \to \gamma K\overline{K})/\Gamma_{total}$ Γ_{174}/Γ

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
8.1±3.0 OUR AVERAGE				
6.6±2.9±2.4	BAI	96B	BES	$e^+e^- \to J/\psi \to \gamma K^+K^-$
10.8±4.0±3.2	BAI	96B	BES	$e^+e^- \to J/\psi \to \gamma K^0_S K^0_S$

$\Gamma(\gamma f_J(2220) \to \gamma p\overline{p})/\Gamma_{total}$ Γ_{175}/Γ

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
1.5±0.6±0.5	BAI	96B	BES	$e^+e^- \to J/\psi \to \gamma p\overline{p}$

$\Gamma(\gamma f_0(1500))/\Gamma_{total}$ Γ_{176}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
1.01±0.32 OUR AVERAGE				
1.00±0.03±0.45	[189] ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$
1.02±0.09±0.45	[189] ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^0\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
>5.7 ±0.8	[190,191] BUGG	95	MRK3	$J/\psi \to \gamma\pi^+\pi^-\pi^+\pi^-$

[189] Including unknown branching fraction to $\pi\pi$.
[190] Including unknown branching ratio for $f_0(1500) \to \pi^+\pi^-\pi^+\pi^-$.
[191] Assuming that $f_0(1500)$ decays only to two S-wave dipions.

$\Gamma(\gamma e^+e^-)/\Gamma_{total}$ Γ_{177}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
8.8±1.3±0.4	[192] ARMSTRONG	96	E760	$\overline{p}p \to e^+e^-\gamma$

[192] For $E_\gamma > 100$ MeV.

WEAK DECAYS

$\Gamma(D^- e^+\nu_e + \text{c.c.})/\Gamma_{total}$ Γ_{178}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<1.2	90	ABLIKIM	06M	BES2	$e^+e^- \to J/\psi$

$\Gamma(\overline{D}^0 e^+e^- + \text{c.c.})/\Gamma_{total}$ Γ_{179}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	90	ABLIKIM	06M	BES2	$e^+e^- \to J/\psi$

$\Gamma(D_s^- e^+\nu_e + \text{c.c.})/\Gamma_{total}$ Γ_{180}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<3.6	90	[193] ABLIKIM	06M	BES2	$e^+e^- \to J/\psi$

[193] Using B($D_s^- \to \phi\pi^-$) = 4.4 ± 0.5 %.

$\Gamma(D^-\pi^+ + \text{c.c.})/\Gamma_{total}$ Γ_{181}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.5 × 10^{-5}	90	ABLIKIM	08J	BES2	$e^+e^- \to J/\psi$

$\Gamma(\overline{D}^0 \overline{K}^0 + \text{c.c.})/\Gamma_{total}$ — Γ_{182}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.7 × 10^{-4}	90	ABLIKIM	08J	BES2	$e^+ e^- \rightarrow J/\psi$

$\Gamma(D_s^- \pi^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{183}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.3 × 10^{-4}	90	ABLIKIM	08J	BES2	$e^+ e^- \rightarrow J/\psi$

$\Gamma(\gamma\gamma)/\Gamma_{total}$ — Γ_{184}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
< 0.5	90	ADAMS	08	CLEO	$\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<16	90	[194] WICHT	08	BELL	$B^\pm \rightarrow K^\pm \gamma\gamma$
< 2.2	90	ABLIKIM	07J	BES2	$\Psi(2S) \rightarrow J/\psi \pi^+ \pi^-$
<50	90	BARTEL	77	CNTR	$e^+ e^-$

[194] WICHT 08 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma\gamma)/\Gamma_{total}] \times [B(B^+ \rightarrow J/\psi(1S) K^+)] < 0.16 \times 10^{-6}$ which we divide by our best value $B(B^+ \rightarrow J/\psi(1S) K^+) = 1.014 \times 10^{-3}$.

LEPTON FAMILY NUMBER (*LF*) VIOLATING MODES

$\Gamma(e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{185}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	90	BAI	03D	BES	$e^+ e^- \rightarrow J/\psi$

$\Gamma(e^\pm \tau^\mp)/\Gamma_{total}$ — Γ_{186}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
<8.3	90	ABLIKIM	04	BES	$e^+ e^- \rightarrow J/\psi$

$\Gamma(\mu^\pm \tau^\mp)/\Gamma_{total}$ — Γ_{187}/Γ

VALUE (units 10^{-6})	CL%	DOCUMENT ID		TECN	COMMENT
<2.0	90	ABLIKIM	04	BES	$e^+ e^- \rightarrow J/\psi$

OTHER DECAYS

$\Gamma(\text{invisible})/\Gamma(\mu^+ \mu^-)$ — Γ_{188}/Γ_6

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.2 × 10^{-2}	90	ABLIKIM	08G	BES2	$\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$

$J/\psi(1S)$ REFERENCES

ANASHIN	10	PL B685 134	V.V. Anashin *et al.*	(KEDR Collab.)
ABLIKIM	09	PL B676 25	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	09B	PR D80 052004	M. Ablikim *et al.*	(BES Collab.)
MITCHELL	09	PRL 102 011801	R.E. Mitchell *et al.*	(CLEO Collab.)
PEDLAR	09	PR D79 111101	T.K. Pedlar *et al.*	(CLEO Collab.)
SHEN	09	PR D80 031101R	C.P. Shen *et al.*	(BELLE Collab.)
ABLIKIM	08	EPJ C53 15	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08A	PR D77 012001	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08C	PL B659 789	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08E	PR D77 032005	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08F	PRL 100 102003	M. Ablikim *et al.*	(BES Collab.)

ABLIKIM	08G	PRL 100 192001	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08I	PL B662 330	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08J	PL B663 297	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	08O	PR D78 092005	M. Ablikim *et al.*	(BES Collab.)
ADAMS	08	PRL 101 101801	G.S. Adams *et al.*	(CLEO Collab.)
AUBERT	08S	PR D77 092002	B. Aubert *et al.*	(BABAR Collab.)
BESSON	08	PR D78 032012	D. Besson *et al.*	(CLEO Collab.)
PDG	08	PL B667 1	C. Amsler *et al.*	(PDG Collab.)
WICHT	08	PL B662 323	J. Wicht *et al.*	(BELLE Collab.)
ABLIKIM	07H	PR D76 092003	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	07J	PR D76 117101	M. Ablikim *et al.*	(BES Collab.)
ANDREOTTI	07	PL B654 74	M. Andreotti *et al.*	(Femilab E835 Collab.)
AUBERT	07AK	PR D76 012008	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07AU	PR D76 092005	B. Aubert *et al.*	(BABAR Collab.)
Also		PR D77 119902E (errat.)	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07BD	PR D76 092006	B. Aubert *et al.*	(BABAR Collab.)
ABLIKIM	06	PL B632 181	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06C	PL B633 681	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06E	PR D73 052008	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06F	PR D73 052007	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06H	PR D73 112007	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06J	PRL 96 162002	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06K	PRL 97 062001	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06M	PL B639 418	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06V	PL B642 441	M. Ablikim *et al.*	(BES Collab.)
ADAMS	06A	PR D73 051103R	G.S. Adams *et al.*	(CLEO Collab.)
AUBERT	06B	PR D73 012005	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	06D	PR D73 052003	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	06E	PRL 96 052002	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,BE	06D	PR D74 091103R	B. Aubert *et al.*	(BABAR Collab.)
WU	06	PRL 97 162003	C.-H. Wu *et al.*	(BELLE Collab.)
ABLIKIM	05	PL B607 243	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05B	PR D71 032003	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05C	PL B610 192	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05H	PR D72 012002	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05R	PRL 95 262001	M. Ablikim *et al.*	(BES Collab.)
AUBERT	05D	PR D71 052001	B. Aubert *et al.*	(BABAR Collab.)
LI	05C	PR D71 111103	Z. Li *et al.*	(CLEO Collab.)
SIBIRTSEV	05A	PR D71 054010	A. Sibirtsev, J. Haidenbauer	
ABLIKIM	04	PL B598 172	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	04M	PR D70 112008	M. Ablikim *et al.*	(BES Collab.)
AUBERT	04	PR D69 011103	B. Aubert *et al.*	(BaBar Collab.)
AUBERT,B	04N	PR D70 072004	B. Aubert *et al.*	(BABAR Collab.)
BAI	04	PL B578 16	J.Z. Bai *et al.*	(BES Collab.)
BAI	04A	PR D69 012003	J.Z. Bai *et al.*	(BES Collab.)
BAI	04D	PL B589 7	J.Z. Bai *et al.*	(BES Collab.)
BAI	04E	PL B591 42	J.Z. Bai *et al.*	(BES Collab.)
BAI	04G	PR D70 012004	J.Z. Bai *et al.*	(BES Collab.)
BAI	04H	PR D70 012005	J.Z. Bai *et al.*	(BES Collab.)
BAI	04J	PL B594 47	J.Z. Bai *et al.*	(BES Collab.)
SETH	04	PR D69 097503	K.K. Seth	
AULCHENKO	03	PL B573 63	V.M. Aulchenko *et al.*	(KEDR Collab.)
BAI	03D	PL B561 49	J.Z. Bai *et al.*	(BES Collab.)
BAI	03F	PRL 91 022001	J.Z. Bai *et al.*	(BES Collab.)
BAI	03G	PR D68 052003	J.Z. Bai *et al.*	(BES Collab.)
HUANG	03	PRL 91 241802	H.-C. Huang *et al.*	(BELLE Collab.)
BAI	02C	PRL 88 101802	J.Z. Bai *et al.*	(BES Collab.)
ARTAMONOV	00	PL B474 427	A.S. Artamonov *et al.*	
BAI	00	PRL 84 594	J.Z. Bai *et al.*	(BES Collab.)
BAI	00B	PL B472 200	J.Z. Bai *et al.*	(BES Collab.)
BAI	00D	PL B476 25	J.Z. Bai *et al.*	(BES Collab.)
BAI	99	PL B446 356	J.Z. Bai *et al.*	(BES Collab.)
BAI	99C	PRL 83 1918	J.Z. Bai *et al.*	(BES Collab.)
BAI	98D	PR D58 092006	J.Z. Bai *et al.*	(BES Collab.)
BAI	98G	PL B424 213	J.Z. Bai *et al.*	(BES Collab.)
BAI	98H	PRL 81 1179	J.Z. Bai *et al.*	(BES Collab.)
BALDINI	98	PL B444 111	R. Baldini *et al.*	(FENICE Collab.)
ARMSTRONG	96	PR D54 7067	T.A. Armstrong *et al.*	(E760 Collab.)
BAI	96B	PRL 76 3502	J.Z. Bai *et al.*	(BES Collab.)
BAI	96C	PRL 77 3959	J.Z. Bai *et al.*	(BES Collab.)
BAI	96D	PR D54 1221	J.Z. Bai *et al.*	(BES Collab.)

GRIBUSHIN	96	PR D53 4723	A. Gribushin *et al.*	(E672 Collab., E706 Collab.)
HASAN	96	PL B388 376	A. Hasan, D.V. Bugg	(BRUN, LOQM)
BAI	95B	PL B355 374	J.Z. Bai *et al.*	(BES Collab.)
BUGG	95	PL B353 378	D.V. Bugg *et al.*	(LOQM, PNPI, WASH)
ANTONELLI	93	PL B301 317	A. Antonelli *et al.*	(FENICE Collab.)
ARMSTRONG	93B	PR D47 772	T.A. Armstrong *et al.*	(FNAL E760 Collab.)
BARNES	93	PL B309 469	P.D. Barnes *et al.*	(PS185 Collab.)
AUGUSTIN	92	PR D46 1951	J.E. Augustin, G. Cosme	(DM2 Collab.)
BOLTON	92	PL B278 495	T. Bolton *et al.*	(Mark III Collab.)
BOLTON	92B	PRL 69 1328	T. Bolton *et al.*	(Mark III Collab.)
COFFMAN	92	PRL 68 282	D.M. Coffman *et al.*	(Mark III Collab.)
HSUEH	92	PR D45 R2181	S. Hsueh, S. Palestini	(FNAL, TORI)
BISELLO	91	NP B350 1	D. Bisello *et al.*	(DM2 Collab.)
AUGUSTIN	90	PR D42 10	J.E. Augustin *et al.*	(DM2 Collab.)
BAI	90B	PRL 65 1309	Z. Bai *et al.*	(Mark III Collab.)
BAI	90C	PRL 65 2507	Z. Bai *et al.*	(Mark III Collab.)
BISELLO	90	PL B241 617	D. Bisello *et al.*	(DM2 Collab.)
COFFMAN	90	PR D41 1410	D.M. Coffman *et al.*	(Mark III Collab.)
JOUSSET	90	PR D41 1389	J. Jousset *et al.*	(DM2 Collab.)
ALEXANDER	89	NP B320 45	J.P. Alexander *et al.*	(LBL, MICH, SLAC)
AUGUSTIN	89	NP B320 1	J.E. Augustin, G. Cosme	(DM2 Collab.)
BISELLO	89B	PR D39 701	G. Busetto *et al.*	(DM2 Collab.)
AUGUSTIN	88	PRL 60 2238	J.E. Augustin *et al.*	(DM2 Collab.)
COFFMAN	88	PR D38 2695	D.M. Coffman *et al.*	(Mark III Collab.)
FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)
AUGUSTIN	87	ZPHY C36 369	J.E. Augustin *et al.*	(LALO, CLER, FRAS+)
BAGLIN	87	NP B286 592	C. Baglin *et al.*	(LAPP, CERN, GENO, LYON+)
BALTRUSAIT...	87	PR D35 2077	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BECKER	87	PRL 59 186	J.J. Becker *et al.*	(Mark III Collab.)
BISELLO	87	PL B192 239	D. Bisello *et al.*	(PADO, CLER, FRAS+)
COHEN	87	RMP 59 1121	E.R. Cohen, B.N. Taylor	(RISC, NBS)
HENRARD	87	NP B292 670	P. Henrard *et al.*	(CLER, FRAS, LALO+)
PALLIN	87	NP B292 653	D. Pallin *et al.*	(CLER, FRAS, LALO, PADO)
BALTRUSAIT...	86	PR D33 629	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BALTRUSAIT...	86B	PR D33 1222	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BALTRUSAIT...	86D	PRL 56 107	R.M. Baltrusaitis	(CIT, UCSC, ILL, SLAC+)
BISELLO	86B	PL B179 294	D. Bisello *et al.*	(DM2 Collab.)
GAISER	86	PR D34 711	J. Gaiser *et al.*	(Crystal Ball Collab.)
BALTRUSAIT...	85C	PRL 55 1723	R.M. Baltrusaitis *et al.*	(CIT, UCSC+)
BALTRUSAIT...	85D	PR D32 566	R.M. Baltrusaitis *et al.*	(CIT, UCSC+)
KURAEV	85	SJNP 41 466	E.A. Kuraev, V.S. Fadin	(NOVO)
		Translated from YAF 41 733.		
BALTRUSAIT...	84	PRL 52 2126	R.M. Baltrusaitis *et al.*	(CIT, UCSC+)
EATON	84	PR D29 804	M.W. Eaton *et al.*	(LBL, SLAC)
BLOOM	83	ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)
EDWARDS	83B	PRL 51 859	C. Edwards *et al.*	(CIT, HARV, PRIN+)
FRANKLIN	83	PRL 51 963	M.E.B. Franklin *et al.*	(LBL, SLAC)
BURKE	82	PRL 49 632	D.L. Burke *et al.*	(LBL, SLAC)
EDWARDS	82B	PR D25 3065	C. Edwards *et al.*	(CIT, HARV, PRIN+)
EDWARDS	82D	PRL 48 458	C. Edwards *et al.*	(CIT, HARV, PRIN+)
Also		ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)
EDWARDS	82E	PRL 49 259	C. Edwards *et al.*	(CIT, HARV, PRIN+)
LEMOIGNE	82	PL 113B 509	Y. Lemoigne *et al.*	(SACL, LOIC, SHMP+)
BESCH	81	ZPHY C8 1	H.J. Besch *et al.*	(BONN, DESY, MANZ)
GIDAL	81	PL 107B 153	G. Gidal *et al.*	(SLAC, LBL)
PARTRIDGE	80	PRL 44 712	R. Partridge *et al.*	(CIT, HARV, PRIN+)
SCHARRE	80	PL 97B 329	D.L. Scharre *et al.*	(SLAC, LBL)
ZHOLENTZ	80	PL 96B 214	A.A. Zholents *et al.*	(NOVO)
Also		SJNP 34 814	A.A. Zholents *et al.*	(NOVO)
		Translated from YAF 34 1471.		
BRANDELIK	79C	ZPHY C1 233	R. Brandelik *et al.*	(DASP Collab.)
ALEXANDER	78	PL 72B 493	G. Alexander *et al.*	(DESY, HAMB, SIEG+)
BESCH	78	PL 78B 347	H.J. Besch *et al.*	(BONN, DESY, MANZ)
BRANDELIK	78B	PL 74B 292	R. Brandelik *et al.*	(DASP Collab.)
PERUZZI	78	PR D17 2901	I. Peruzzi *et al.*	(SLAC, LBL)
BARTEL	77	PL 66B 489	W. Bartel *et al.*	(DESY, HEIDP)
BURMESTER	77D	PL 72B 135	J. Burmester *et al.*	(DESY, HAMB, SIEG+)
FELDMAN	77	PRPL 33C 285	G.J. Feldman, M.L. Perl	(LBL, SLAC)
VANNUCCI	77	PR D15 1814	F. Vannucci *et al.*	(SLAC, LBL)
BARTEL	76	PL 64B 483	W. Bartel *et al.*	(DESY, HEIDP)
BRAUNSCH...	76	PL 63B 487	W. Braunschweig *et al.*	(DASP Collab.)

JEAN-MARIE	76	PRL 36 291	B. Jean-Marie *et al.*	(SLAC, LBL) IG
BALDINI-...	75	PL 58B 471	R. Baldini-Celio *et al.*	(FRAS, ROMA)
BOYARSKI	75	PRL 34 1357	A.M. Boyarski *et al.*	(SLAC, LBL) JPC
DASP	75	PL 56B 491	W. Braunschweig *et al.*	(DASP Collab.)
ESPOSITO	75B	LNC 14 73	B. Esposito *et al.*	(FRAS, NAPL, PADO+)
FORD	75	PRL 34 604	R.L. Ford *et al.*	(SLAC, PENN)