

$J/\psi(1S)$

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

 $J/\psi(1S)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
3096.900 ± 0.006 OUR AVERAGE				
3096.900 ± 0.002 ± 0.006		¹ ANASHIN	15 KEDR	$e^+e^- \rightarrow \text{hadrons}$
3096.89 ± 0.09	502	² ARTAMONOV	00 OLYA	$e^+e^- \rightarrow \text{hadrons}$
3096.91 ± 0.03 ± 0.01		³ ARMSTRONG	93B E760	$\bar{p}p \rightarrow e^+e^-$
3096.95 ± 0.1 ± 0.3	193	BAGLIN	87 SPEC	$\bar{p}p \rightarrow e^+e^-X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
3096.66 ± 0.19 ± 0.02	6.1k	⁴ AAIJ	15BI LHCB	$pp \rightarrow J/\psi X$
3096.917 ± 0.010 ± 0.007		AULCHENKO	03 KEDR	$e^+e^- \rightarrow \text{hadrons}$
3097.5 ± 0.3		GRIBUSHIN	96 FMPS	515 $\pi^- \text{Be} \rightarrow 2\mu X$
3098.4 ± 2.0	38k	LEMOIGNE	82 GOLI	185 $\pi^- \text{Be} \rightarrow \gamma\mu^+\mu^- A$
3096.93 ± 0.09	502	⁵ ZHOLENTZ	80 REDE	e^+e^-
3097.0 ± 1		⁶ BRANDELIK	79C DASP	e^+e^-

¹ Supersedes AULCHENKO 03.² Reanalysis of ZHOLENTZ 80 using new electron mass (COHEN 87) and radiative corrections (KURAEV 85).³ 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 03.⁴ From a sample of $\eta_c(1S)$ and J/ψ produced in b -hadron decays. Systematic uncertainties not estimated.⁵ Superseded by ARTAMONOV 00.⁶ From a simultaneous fit to e^+e^- , $\mu^+\mu^-$ and hadronic channels assuming $\Gamma(e^+e^-) = \Gamma(\mu^+\mu^-)$. **$J/\psi(1S)$ WIDTH**

<u>VALUE (keV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
92.9 ± 2.8 OUR AVERAGE Error includes scale factor of 1.1.				
96.1 ± 3.2	13k	¹ ADAMS	06A CLEO	$e^+e^- \rightarrow \mu^+\mu^-\gamma$
84.4 ± 8.9		BAI	95B BES	e^+e^-
91 ± 11 ± 6		² ARMSTRONG	93B E760	$\bar{p}p \rightarrow e^+e^-$
85.5 $\begin{smallmatrix} +6.1 \\ -5.8 \end{smallmatrix}$		³ HSUEH	92 RVUE	See Υ mini-review
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
92.94 ± 1.83		⁴ ANASHIN	18A KEDR	e^+e^-
94.1 ± 2.7		⁵ ANASHIN	10 KEDR	3.097 $e^+e^- \rightarrow e^+e^-$, $\mu^+\mu^-$
93.7 ± 3.5	7.8k	¹ AUBERT	04 BABR	$e^+e^- \rightarrow \mu^+\mu^-\gamma$

¹ 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 $B(\mu^+\mu^-) = (5.93 \pm 0.06)\%$.² The initial-state radiation correction reevaluated by ANDREOTTI 07 in its Ref. [4].³ Using data from COFFMAN 92, BALDINI-CELIO 75, BOYARSKI 75, ESPOSITO 75B, BRANDELIK 79C.⁴ Using $\Gamma(e^+e^-)$ from ANASHIN 18A and $B(J/\psi(1S) \rightarrow e^+e^-) = (5.971 \pm 0.032)\%$ from PDG 16.⁵ Assuming $\Gamma(e^+e^-) = \Gamma(\mu^+\mu^-)$ and using $\Gamma(e^+e^-)/\Gamma_{\text{total}} = (5.94 \pm 0.06)\%$.

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

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1 hadrons	(87.7 \pm 0.5) %	
Γ_2 virtual $\gamma \rightarrow$ hadrons	(13.50 \pm 0.30) %	
Γ_3 $g g g$	(64.1 \pm 1.0) %	
Γ_4 $\gamma g g$	(8.8 \pm 1.1) %	
Γ_5 $e^+ e^-$	(5.971 \pm 0.032) %	
Γ_6 $e^+ e^- \gamma$	[a] (8.8 \pm 1.4) $\times 10^{-3}$	
Γ_7 $\mu^+ \mu^-$	(5.961 \pm 0.033) %	

Decays involving hadronic resonances

Γ_8 $\rho \pi$	(1.69 \pm 0.15) %	S=2.4
Γ_9 $\rho^0 \pi^0$	(5.6 \pm 0.7) $\times 10^{-3}$	
Γ_{10} $\rho(770)^\mp K^\pm K_S^0$	(1.9 \pm 0.4) $\times 10^{-3}$	
Γ_{11} $\rho(1450) \pi$		
Γ_{12} $\rho(1450) \pi \rightarrow \pi^+ \pi^- \pi^0$	(2.3 \pm 0.7) $\times 10^{-3}$	
Γ_{13} $\rho(1450)^\pm \pi^\mp \rightarrow K_S^0 K^\pm \pi^\mp$	(3.5 \pm 0.6) $\times 10^{-4}$	
Γ_{14} $\rho(1450)^0 \pi^0 \rightarrow K^+ K^- \pi^0$	(2.0 \pm 0.5) $\times 10^{-4}$	
Γ_{15} $\rho(1450) \eta'(958) \rightarrow$ $\pi^+ \pi^- \eta'(958)$	(3.3 \pm 0.7) $\times 10^{-6}$	
Γ_{16} $\rho(1700) \pi$		
Γ_{17} $\rho(1700) \pi \rightarrow \pi^+ \pi^- \pi^0$	(1.7 \pm 1.1) $\times 10^{-4}$	
Γ_{18} $\rho(2150) \pi$		
Γ_{19} $\rho(2150) \pi \rightarrow \pi^+ \pi^- \pi^0$	(8 \pm 40) $\times 10^{-6}$	
Γ_{20} $\rho_3(1690) \pi \rightarrow \pi^+ \pi^- \pi^0$		
Γ_{21} $a_2(1320) \rho$	(1.09 \pm 0.22) %	
Γ_{22} $\omega \pi^+ \pi^+ \pi^- \pi^-$	(8.5 \pm 3.4) $\times 10^{-3}$	
Γ_{23} $\omega \pi^+ \pi^- \pi^0$	(4.0 \pm 0.7) $\times 10^{-3}$	
Γ_{24} $\omega \pi^+ \pi^-$	(7.2 \pm 1.0) $\times 10^{-3}$	
Γ_{25} $\omega f_2(1270)$	(4.3 \pm 0.6) $\times 10^{-3}$	
Γ_{26} $K^*(892)^0 \bar{K}^*(892)^0$	(2.3 \pm 0.6) $\times 10^{-4}$	
Γ_{27} $K^*(892)^\pm K^*(892)^\mp$	(1.00 $^{+0.22}_{-0.40}$) $\times 10^{-3}$	
Γ_{28} $K^*(892)^\pm K^*(700)^\mp$	(1.1 $^{+1.0}_{-0.6}$) $\times 10^{-3}$	
Γ_{29} $K_S^0 \pi^- K^*(892)^+ + \text{c.c.}$	(2.0 \pm 0.5) $\times 10^{-3}$	
Γ_{30} $K_S^0 \pi^- K^*(892)^+ + \text{c.c.} \rightarrow$ $K_S^0 K_S^0 \pi^+ \pi^-$	(6.7 \pm 2.2) $\times 10^{-4}$	
Γ_{31} $K_S^0 K^*(892)^0 \rightarrow \gamma K_S^0 K_S^0$	(6.3 $^{+0.6}_{-0.5}$) $\times 10^{-6}$	
Γ_{32} $\eta K^*(892)^0 \bar{K}^*(892)^0$	(1.15 \pm 0.26) $\times 10^{-3}$	
Γ_{33} $\eta' K^{*\pm} K^\mp$	(1.48 \pm 0.13) $\times 10^{-3}$	
Γ_{34} $\eta' K^{*0} \bar{K}^0 + \text{c.c.}$	(1.66 \pm 0.21) $\times 10^{-3}$	
Γ_{35} $\eta' h_1(1415) \rightarrow \eta' K^* \bar{K} + \text{c.c.}$	(2.16 \pm 0.31) $\times 10^{-4}$	

Γ_{36}	$\eta' h_1(1415) \rightarrow \eta' K^{*\pm} K^\mp$	$(1.51 \pm 0.23) \times 10^{-4}$
Γ_{37}	$K^*(1410) \bar{K} + \text{c.c.}$	
Γ_{38}	$K^*(1410) \bar{K} + \text{c.c.} \rightarrow$ $K^\pm K^\mp \pi^0$	$(4.9 \pm 2.8) \times 10^{-5}$
Γ_{39}	$K^*(1410) \bar{K} + \text{c.c.} \rightarrow$ $K_S^0 K^\pm \pi^\mp$	$(8 \pm 6) \times 10^{-5}$
Γ_{40}	$K_2^*(1430) \bar{K} + \text{c.c.}$	
Γ_{41}	$K_2^*(1430) \bar{K} + \text{c.c.} \rightarrow$ $K^\pm K^\mp \pi^0$	$(7.5 \pm 3.5) \times 10^{-5}$
Γ_{42}	$K_2^*(1430) \bar{K} + \text{c.c.} \rightarrow$ $K_S^0 K^\pm \pi^\mp$	$(4.0 \pm 1.0) \times 10^{-4}$
Γ_{43}	$K^*(892)^0 \bar{K}_2^*(1430)^0 + \text{c.c.}$	$(4.66 \pm 0.31) \times 10^{-3}$
Γ_{44}	$K^*(892)^+ K_2^*(1430)^- + \text{c.c.}$	$(3.4 \pm 2.9) \times 10^{-3}$
Γ_{45}	$K^*(892)^+ K_2^*(1430)^- + \text{c.c.} \rightarrow$ $K^*(892)^+ K_S^0 \pi^- + \text{c.c.}$	$(4 \pm 4) \times 10^{-4}$
Γ_{46}	$K^*(892)^0 \bar{K}_2^*(1770)^0 + \text{c.c.} \rightarrow$ $K^*(892)^0 K^- \pi^+ + \text{c.c.}$	$(6.9 \pm 0.9) \times 10^{-4}$
Γ_{47}	$\omega K^*(892) \bar{K} + \text{c.c.}$	$(6.1 \pm 0.9) \times 10^{-3}$
Γ_{48}	$\bar{K} K^*(892) + \text{c.c.}$	
Γ_{49}	$\bar{K} K^*(892) + \text{c.c.} \rightarrow$ $K_S^0 K^\pm \pi^\mp$	$(5.0 \pm 0.5) \times 10^{-3}$
Γ_{50}	$K^+ K^*(892)^- + \text{c.c.}$	$(5.0 \pm 0.4) \times 10^{-3}$
Γ_{51}	$K^+ K^*(892)^- + \text{c.c.} \rightarrow$ $K^+ K^- \pi^0$	$(1.98 \pm 0.21) \times 10^{-3}$
Γ_{52}	$K^+ K^*(892)^- + \text{c.c.} \rightarrow$ $K^0 K^\pm \pi^\mp + \text{c.c.}$	$(3.0 \pm 0.4) \times 10^{-3}$
Γ_{53}	$K^0 \bar{K}^*(892)^0 + \text{c.c.}$	$(4.2 \pm 0.4) \times 10^{-3}$
Γ_{54}	$K^0 \bar{K}^*(892)^0 + \text{c.c.} \rightarrow$ $K^0 K^\pm \pi^\mp + \text{c.c.}$	$(3.2 \pm 0.4) \times 10^{-3}$
Γ_{55}	$K_1(1400)^\pm K^\mp$	$(3.8 \pm 1.4) \times 10^{-3}$
Γ_{56}	$\bar{K}^*(892)^0 K^+ \pi^- + \text{c.c.}$	$(7.7 \pm 1.6) \times 10^{-3}$
Γ_{57}	$K^*(892)^\pm K^\mp \pi^0$	$(4.1 \pm 1.3) \times 10^{-3}$
Γ_{58}	$K^*(892)^0 K_S^0 \pi^0$	$(6 \pm 4) \times 10^{-4}$
Γ_{59}	$\omega \pi^0 \pi^0$	$(3.4 \pm 0.8) \times 10^{-3}$
Γ_{60}	$\omega \pi^0 \eta$	$(3.4 \pm 1.7) \times 10^{-4}$
Γ_{61}	$b_1(1235)^\pm \pi^\mp$	[b] $(3.0 \pm 0.5) \times 10^{-3}$
Γ_{62}	$\omega K^\pm K_S^0 \pi^\mp$	[b] $(3.4 \pm 0.5) \times 10^{-3}$
Γ_{63}	$b_1(1235)^0 \pi^0$	$(2.3 \pm 0.6) \times 10^{-3}$
Γ_{64}	$\eta K^\pm K_S^0 \pi^\mp$	[b] $(2.2 \pm 0.4) \times 10^{-3}$
Γ_{65}	$\phi K^*(892) \bar{K} + \text{c.c.}$	$(2.18 \pm 0.23) \times 10^{-3}$
Γ_{66}	$\omega K \bar{K}$	$(1.9 \pm 0.4) \times 10^{-3}$
Γ_{67}	$\omega f_0(1710) \rightarrow \omega K \bar{K}$	$(4.8 \pm 1.1) \times 10^{-4}$
Γ_{68}	$\phi 2(\pi^+ \pi^-)$	$(1.60 \pm 0.32) \times 10^{-3}$
Γ_{69}	$\Delta(1232)^{++} \bar{p} \pi^-$	$(1.6 \pm 0.5) \times 10^{-3}$

Γ_{70}	$\omega\eta$		$(1.74 \pm 0.20) \times 10^{-3}$	S=1.6
Γ_{71}	$\phi K\bar{K}$		$(1.77 \pm 0.16) \times 10^{-3}$	S=1.3
Γ_{72}	$\phi K_S^0 K_S^0$		$(5.9 \pm 1.5) \times 10^{-4}$	
Γ_{73}	$\phi f_0(1710) \rightarrow \phi K\bar{K}$		$(3.6 \pm 0.6) \times 10^{-4}$	
Γ_{74}	$\phi K^+ K^-$		$(8.3 \pm 1.2) \times 10^{-4}$	
Γ_{75}	$\phi f_2(1270)$		$(3.2 \pm 0.6) \times 10^{-4}$	
Γ_{76}	$\Delta(1232)^{++}\bar{\Delta}(1232)^{--}$		$(1.10 \pm 0.29) \times 10^{-3}$	
Γ_{77}	$\Sigma(1385)^-\bar{\Sigma}(1385)^+$ (or c.c.)	[b]	$(1.16 \pm 0.05) \times 10^{-3}$	
Γ_{78}	$\Sigma(1385)^0\bar{\Sigma}(1385)^0$		$(1.07 \pm 0.08) \times 10^{-3}$	
Γ_{79}	$K^+ K^- f_2'(1525)$		$(1.04 \pm 0.35) \times 10^{-3}$	
Γ_{80}	$\phi f_2'(1525)$		$(8 \pm 4) \times 10^{-4}$	S=2.7
Γ_{81}	$\phi\pi^+\pi^-$		$(9.4 \pm 1.5) \times 10^{-4}$	S=1.7
Γ_{82}	$\phi\pi^0\pi^0$		$(5.0 \pm 1.0) \times 10^{-4}$	
Γ_{83}	$\phi K^\pm K_S^0\pi^\mp$	[b]	$(7.2 \pm 0.8) \times 10^{-4}$	
Γ_{84}	$\omega f_1(1420)$		$(6.8 \pm 2.4) \times 10^{-4}$	
Γ_{85}	$\phi\eta$		$(7.4 \pm 0.8) \times 10^{-4}$	S=1.5
Γ_{86}	$\Xi^0\Xi^0$		$(1.17 \pm 0.04) \times 10^{-3}$	
Γ_{87}	$\Xi(1530)^-\Xi^+$		$(5.9 \pm 1.5) \times 10^{-4}$	
Γ_{88}	$pK^-\bar{\Sigma}(1385)^0$		$(5.1 \pm 3.2) \times 10^{-4}$	
Γ_{89}	$\omega\pi^0$		$(4.5 \pm 0.5) \times 10^{-4}$	S=1.4
Γ_{90}	$\omega\pi^0 \rightarrow \pi^+\pi^-\pi^0$		$(1.7 \pm 0.8) \times 10^{-5}$	
Γ_{91}	$\phi\eta'(958)$		$(4.6 \pm 0.5) \times 10^{-4}$	S=2.2
Γ_{92}	$\phi f_0(980)$		$(3.2 \pm 0.9) \times 10^{-4}$	S=1.9
Γ_{93}	$\phi f_0(980) \rightarrow \phi\pi^+\pi^-$		$(2.59 \pm 0.34) \times 10^{-4}$	
Γ_{94}	$\phi f_0(980) \rightarrow \phi\pi^0\pi^0$		$(1.8 \pm 0.5) \times 10^{-4}$	
Γ_{95}	$\phi\pi^0 f_0(980) \rightarrow \phi\pi^0\pi^+\pi^-$		$(4.5 \pm 1.0) \times 10^{-6}$	
Γ_{96}	$\phi\pi^0 f_0(980) \rightarrow \phi\pi^0\rho^0\pi^0$		$(1.7 \pm 0.6) \times 10^{-6}$	
Γ_{97}	$\eta\phi f_0(980) \rightarrow \eta\phi\pi^+\pi^-$		$(3.2 \pm 1.0) \times 10^{-4}$	
Γ_{98}	$\phi a_0(980)^0 \rightarrow \phi\eta\pi^0$		$(4.4 \pm 1.4) \times 10^{-6}$	
Γ_{99}	$\Xi(1530)^0\Xi^0$		$(3.2 \pm 1.4) \times 10^{-4}$	
Γ_{100}	$\Sigma(1385)^-\bar{\Sigma}^+$ (or c.c.)	[b]	$(3.1 \pm 0.5) \times 10^{-4}$	
Γ_{101}	$\phi f_1(1285)$		$(2.6 \pm 0.5) \times 10^{-4}$	
Γ_{102}	$\phi f_1(1285) \rightarrow \phi\pi^0 f_0(980) \rightarrow$ $\phi\pi^0\pi^+\pi^-$		$(9.4 \pm 2.8) \times 10^{-7}$	
Γ_{103}	$\phi f_1(1285) \rightarrow \phi\pi^0 f_0(980) \rightarrow$ $\phi\pi^0\pi^0\pi^0$		$(2.1 \pm 2.2) \times 10^{-7}$	
Γ_{104}	$\eta\pi^+\pi^-$		$(4.2 \pm 0.8) \times 10^{-4}$	
Γ_{105}	$\eta\rho$		$(1.93 \pm 0.23) \times 10^{-4}$	
Γ_{106}	$\omega\eta'(958)$		$(1.89 \pm 0.18) \times 10^{-4}$	
Γ_{107}	$\omega f_0(980)$		$(1.4 \pm 0.5) \times 10^{-4}$	
Γ_{108}	$\rho\eta'(958)$		$(8.1 \pm 0.8) \times 10^{-5}$	S=1.6
Γ_{109}	$a_2(1320)^\pm\pi^\mp$	[b]	$< 4.3 \times 10^{-3}$	CL=90%
Γ_{110}	$K\bar{K}_2^*(1430) + \text{c.c.}$		$< 4.0 \times 10^{-3}$	CL=90%
Γ_{111}	$K_1(1270)^\pm K^\mp$		$< 3.0 \times 10^{-3}$	CL=90%

Γ_{112}	$K_1(1270)K_S^0 \rightarrow \gamma K_S^0 K_S^0$	$(8.5 \pm 2.5) \times 10^{-7}$	
Γ_{113}	$K_S^0 \pi^- K_2^*(1430)^+ + \text{c.c.}$	$(3.6 \pm 1.8) \times 10^{-3}$	
Γ_{114}	$K_2^*(1430)^0 \bar{K}_2^*(1430)^0$	< 2.9	$\times 10^{-3}$ CL=90%
Γ_{115}	$\phi \pi^0$	3×10^{-6} or 1×10^{-7}	
Γ_{116}	$\phi \eta(1405) \rightarrow \phi \eta \pi^+ \pi^-$	$(2.0 \pm 1.0) \times 10^{-5}$	
Γ_{117}	$\omega f_2'(1525)$	< 2.2	$\times 10^{-4}$ CL=90%
Γ_{118}	$\omega X(1835) \rightarrow \omega p \bar{p}$	< 3.9	$\times 10^{-6}$ CL=95%
Γ_{119}	$\phi X(1835) \rightarrow \phi p \bar{p}$	< 2.1	$\times 10^{-7}$ CL=90%
Γ_{120}	$\phi X(1835) \rightarrow \phi \eta \pi^+ \pi^-$	< 2.8	$\times 10^{-4}$ CL=90%
Γ_{121}	$\phi X(1870) \rightarrow \phi \eta \pi^+ \pi^-$	< 6.13	$\times 10^{-5}$ CL=90%
Γ_{122}	$\eta \phi(2170) \rightarrow \eta \phi f_0(980) \rightarrow$ $\eta \phi \pi^+ \pi^-$	$(1.2 \pm 0.4) \times 10^{-4}$	
Γ_{123}	$\eta \phi(2170) \rightarrow$ $\eta K^*(892)^0 \bar{K}^*(892)^0$	< 2.52	$\times 10^{-4}$ CL=90%
Γ_{124}	$\Sigma(1385)^0 \bar{\Lambda} + \text{c.c.}$	< 8.2	$\times 10^{-6}$ CL=90%
Γ_{125}	$\Delta(1232)^+ \bar{p}$	< 1	$\times 10^{-4}$ CL=90%
Γ_{126}	$\Lambda(1520) \bar{\Lambda} + \text{c.c.} \rightarrow \gamma \Lambda \bar{\Lambda}$	< 4.1	$\times 10^{-6}$ CL=90%
Γ_{127}	$\bar{\Lambda}(1520) \Lambda + \text{c.c.}$	< 1.80	$\times 10^{-3}$ CL=90%
Γ_{128}	$\Theta(1540) \bar{\Theta}(1540) \rightarrow$ $K_S^0 p K^- \bar{n} + \text{c.c.}$	< 1.1	$\times 10^{-5}$ CL=90%
Γ_{129}	$\Theta(1540) K^- \bar{n} \rightarrow K_S^0 p K^- \bar{n}$	< 2.1	$\times 10^{-5}$ CL=90%
Γ_{130}	$\Theta(1540) K_S^0 \bar{p} \rightarrow K_S^0 \bar{p} K^+ n$	< 1.6	$\times 10^{-5}$ CL=90%
Γ_{131}	$\bar{\Theta}(1540) K^+ n \rightarrow K_S^0 \bar{p} K^+ n$	< 5.6	$\times 10^{-5}$ CL=90%
Γ_{132}	$\bar{\Theta}(1540) K_S^0 p \rightarrow K_S^0 p K^- \bar{n}$	< 1.1	$\times 10^{-5}$ CL=90%

Decays into stable hadrons

Γ_{133}	$2(\pi^+ \pi^-) \pi^0$	$(3.37 \pm 0.26) \%$	
Γ_{134}	$3(\pi^+ \pi^-) \pi^0$	$(2.9 \pm 0.6) \%$	
Γ_{135}	$\pi^+ \pi^- \pi^0$	$(2.10 \pm 0.08) \%$	S=1.6
Γ_{136}	$\pi^+ \pi^- \pi^0 \pi^0 \pi^0$	$(2.71 \pm 0.29) \%$	
Γ_{137}	$\rho^\pm \pi^\mp \pi^0 \pi^0$	$(1.41 \pm 0.22) \%$	
Γ_{138}	$\rho^+ \rho^- \pi^0$	$(6.0 \pm 1.1) \times 10^{-3}$	
Γ_{139}	$\pi^+ \pi^- \pi^0 K^+ K^-$	$(1.20 \pm 0.30) \%$	
Γ_{140}	$4(\pi^+ \pi^-) \pi^0$	$(9.0 \pm 3.0) \times 10^{-3}$	
Γ_{141}	$\pi^+ \pi^- K^+ K^-$	$(6.84 \pm 0.32) \times 10^{-3}$	
Γ_{142}	$\pi^+ \pi^- K_S^0 K_L^0$	$(3.8 \pm 0.6) \times 10^{-3}$	
Γ_{143}	$\pi^+ \pi^- K_S^0 K_S^0$	$(1.68 \pm 0.19) \times 10^{-3}$	
Γ_{144}	$\pi^\pm \pi^0 K^\mp K_S^0$	$(5.7 \pm 0.5) \times 10^{-3}$	
Γ_{145}	$K^+ K^- K_S^0 K_S^0$	$(4.1 \pm 0.8) \times 10^{-4}$	
Γ_{146}	$\pi^+ \pi^- K^+ K^- \eta$	$(4.7 \pm 0.7) \times 10^{-3}$	
Γ_{147}	$\pi^0 \pi^0 K^+ K^-$	$(2.12 \pm 0.23) \times 10^{-3}$	
Γ_{148}	$\pi^0 \pi^0 K_S^0 K_L^0$	$(1.9 \pm 0.4) \times 10^{-3}$	
Γ_{149}	$K \bar{K} \pi$	$(6.1 \pm 1.0) \times 10^{-3}$	
Γ_{150}	$K^+ K^- \pi^0$	$(2.14 \pm 0.24) \times 10^{-3}$	

Γ_{151}	$K_S^0 K^\pm \pi^\mp$	$(5.6 \pm 0.5) \times 10^{-3}$	
Γ_{152}	$K_S^0 K_L^0 \pi^0$	$(2.06 \pm 0.27) \times 10^{-3}$	
Γ_{153}	$K^*(892)^0 \bar{K}^0 + \text{c.c.} \rightarrow$ $K_S^0 K_L^0 \pi^0$	$(1.21 \pm 0.18) \times 10^{-3}$	
Γ_{154}	$K_2^*(1430)^0 \bar{K}^0 + \text{c.c.} \rightarrow$ $K_S^0 K_L^0 \pi^0$	$(4.3 \pm 1.3) \times 10^{-4}$	
Γ_{155}	$K_S^0 K_L^0 \eta$	$(1.44 \pm 0.34) \times 10^{-3}$	
Γ_{156}	$2(\pi^+ \pi^-)$	$(3.57 \pm 0.30) \times 10^{-3}$	
Γ_{157}	$3(\pi^+ \pi^-)$	$(4.3 \pm 0.4) \times 10^{-3}$	
Γ_{158}	$2(\pi^+ \pi^- \pi^0)$	$(1.61 \pm 0.21) \%$	
Γ_{159}	$2(\pi^+ \pi^-) \eta$	$(2.26 \pm 0.28) \times 10^{-3}$	
Γ_{160}	$3(\pi^+ \pi^-) \eta$	$(7.2 \pm 1.5) \times 10^{-4}$	
Γ_{161}	$\pi^+ \pi^- \pi^0 \pi^0 \eta$	$(2.3 \pm 0.5) \times 10^{-3}$	
Γ_{162}	$\rho^\pm \pi^\mp \pi^0 \eta$	$(1.9 \pm 0.8) \times 10^{-3}$	
Γ_{163}	$\rho \bar{\rho}$	$(2.121 \pm 0.029) \times 10^{-3}$	
Γ_{164}	$\rho \bar{\rho} \pi^0$	$(1.19 \pm 0.08) \times 10^{-3}$	S=1.1
Γ_{165}	$\rho \bar{\rho} \pi^+ \pi^-$	$(6.0 \pm 0.5) \times 10^{-3}$	S=1.3
Γ_{166}	$\rho \bar{\rho} \pi^+ \pi^- \pi^0$	[c] $(2.3 \pm 0.9) \times 10^{-3}$	S=1.9
Γ_{167}	$\rho \bar{\rho} \eta$	$(2.00 \pm 0.12) \times 10^{-3}$	
Γ_{168}	$\rho \bar{\rho} \rho$	< 3.1 $\times 10^{-4}$	CL=90%
Γ_{169}	$\rho \bar{\rho} \omega$	$(9.8 \pm 1.0) \times 10^{-4}$	S=1.3
Γ_{170}	$\rho \bar{\rho} \eta'(958)$	$(1.29 \pm 0.14) \times 10^{-4}$	S=2.0
Γ_{171}	$\rho \bar{\rho} a_0(980) \rightarrow \rho \bar{\rho} \pi^0 \eta$	$(6.8 \pm 1.8) \times 10^{-5}$	
Γ_{172}	$\rho \bar{\rho} \phi$	$(5.19 \pm 0.33) \times 10^{-5}$	
Γ_{173}	$n \bar{n}$	$(2.09 \pm 0.16) \times 10^{-3}$	
Γ_{174}	$n \bar{n} \pi^+ \pi^-$	$(4 \pm 4) \times 10^{-3}$	
Γ_{175}	$\Sigma^+ \bar{\Sigma}^-$	$(1.50 \pm 0.24) \times 10^{-3}$	
Γ_{176}	$\Sigma^0 \bar{\Sigma}^0$	$(1.172 \pm 0.032) \times 10^{-3}$	S=1.4
Γ_{177}	$2(\pi^+ \pi^-) K^+ K^-$	$(3.1 \pm 1.3) \times 10^{-3}$	
Γ_{178}	$\rho \bar{n} \pi^-$	$(2.12 \pm 0.09) \times 10^{-3}$	
Γ_{179}	$n N(1440)$	seen	
Γ_{180}	$n N(1520)$	seen	
Γ_{181}	$n N(1535)$	seen	
Γ_{182}	$\Xi^- \bar{\Xi}^+$	$(9.7 \pm 0.8) \times 10^{-4}$	S=1.4
Γ_{183}	$\Lambda \bar{\Lambda}$	$(1.89 \pm 0.09) \times 10^{-3}$	S=2.8
Γ_{184}	$\Lambda \bar{\Sigma}^- \pi^+ (\text{or c.c.})$	[b] $(8.3 \pm 0.7) \times 10^{-4}$	S=1.2
Γ_{185}	$\rho K^- \bar{\Lambda} + \text{c.c.}$	$(8.7 \pm 1.1) \times 10^{-4}$	
Γ_{186}	$2(K^+ K^-)$	$(7.2 \pm 0.8) \times 10^{-4}$	
Γ_{187}	$\rho K^- \bar{\Sigma}^0$	$(2.9 \pm 0.8) \times 10^{-4}$	
Γ_{188}	$K^+ K^-$	$(2.86 \pm 0.21) \times 10^{-4}$	
Γ_{189}	$K_S^0 K_L^0$	$(1.95 \pm 0.11) \times 10^{-4}$	S=2.4
Γ_{190}	$\Lambda \bar{\Lambda} \pi^+ \pi^-$	$(4.3 \pm 1.0) \times 10^{-3}$	
Γ_{191}	$\Lambda \bar{\Lambda} \eta$	$(1.62 \pm 0.17) \times 10^{-4}$	
Γ_{192}	$\Lambda \bar{\Lambda} \pi^0$	$(3.8 \pm 0.4) \times 10^{-5}$	

Γ_{193}	$\bar{\Lambda}nK_S^0 + \text{c.c.}$	$(6.5 \pm 1.1) \times 10^{-4}$	
Γ_{194}	$\pi^+\pi^-$	$(1.47 \pm 0.14) \times 10^{-4}$	
Γ_{195}	$\Lambda\bar{\Sigma} + \text{c.c.}$	$(2.83 \pm 0.23) \times 10^{-5}$	
Γ_{196}	$K_S^0 K_S^0$	$< 1.4 \times 10^{-8}$	CL=95%

Radiative decays

Γ_{197}	3γ	$(1.16 \pm 0.22) \times 10^{-5}$	
Γ_{198}	4γ	$< 9 \times 10^{-6}$	CL=90%
Γ_{199}	5γ	$< 1.5 \times 10^{-5}$	CL=90%
Γ_{200}	$\gamma\pi^0\pi^0$	$(1.15 \pm 0.05) \times 10^{-3}$	
Γ_{201}	$\gamma\eta\pi^0$	$(2.14 \pm 0.31) \times 10^{-5}$	
Γ_{202}	$\gamma a_0(980)^0 \rightarrow \gamma\eta\pi^0$	$< 2.5 \times 10^{-6}$	CL=95%
Γ_{203}	$\gamma a_2(1320)^0 \rightarrow \gamma\eta\pi^0$	$< 6.6 \times 10^{-6}$	CL=95%
Γ_{204}	$\gamma K_S^0 K_S^0$	$(8.1 \pm 0.4) \times 10^{-4}$	
Γ_{205}	$\gamma\eta_c(1S)$	$(1.7 \pm 0.4)\%$	S=1.5
Γ_{206}	$\gamma\eta_c(1S) \rightarrow 3\gamma$	$(3.8 \begin{smallmatrix} + 1.3 \\ - 1.0 \end{smallmatrix}) \times 10^{-6}$	S=1.1
Γ_{207}	$\gamma\pi^+\pi^-2\pi^0$	$(8.3 \pm 3.1) \times 10^{-3}$	
Γ_{208}	$\gamma\eta\pi\pi$	$(6.1 \pm 1.0) \times 10^{-3}$	
Γ_{209}	$\gamma\eta_2(1870) \rightarrow \gamma\eta\pi^+\pi^-$	$(6.2 \pm 2.4) \times 10^{-4}$	
Γ_{210}	$\gamma\eta(1405/1475) \rightarrow \gamma K\bar{K}\pi$	[d] $(2.8 \pm 0.6) \times 10^{-3}$	S=1.6
Γ_{211}	$\gamma\eta(1405/1475) \rightarrow \gamma\gamma\rho^0$	$(7.8 \pm 2.0) \times 10^{-5}$	S=1.8
Γ_{212}	$\gamma\eta(1405/1475) \rightarrow \gamma\eta\pi^+\pi^-$	$(3.0 \pm 0.5) \times 10^{-4}$	
Γ_{213}	$\gamma\eta(1405/1475) \rightarrow \gamma\gamma\phi$	$< 8.2 \times 10^{-5}$	CL=95%
Γ_{214}	$\gamma\eta(1405) \rightarrow \gamma\gamma\gamma$	$< 2.63 \times 10^{-6}$	CL=90%
Γ_{215}	$\gamma\eta(1475) \rightarrow \gamma\gamma\gamma$	$< 1.86 \times 10^{-6}$	CL=90%
Γ_{216}	$\gamma\rho\rho$	$(4.5 \pm 0.8) \times 10^{-3}$	
Γ_{217}	$\gamma\rho\omega$	$< 5.4 \times 10^{-4}$	CL=90%
Γ_{218}	$\gamma\rho\phi$	$< 8.8 \times 10^{-5}$	CL=90%
Γ_{219}	$\gamma\eta'(958)$	$(5.21 \pm 0.17) \times 10^{-3}$	S=1.4
Γ_{220}	$\gamma 2\pi^+ 2\pi^-$	$(2.8 \pm 0.5) \times 10^{-3}$	S=1.9
Γ_{221}	$\gamma f_2(1270) f_2(1270)$	$(9.5 \pm 1.7) \times 10^{-4}$	
Γ_{222}	$\gamma f_2(1270) f_2(1270)$ (non resonant)	$(8.2 \pm 1.9) \times 10^{-4}$	
Γ_{223}	$\gamma K^+ K^- \pi^+ \pi^-$	$(2.1 \pm 0.6) \times 10^{-3}$	
Γ_{224}	$\gamma f_4(2050)$	$(2.7 \pm 0.7) \times 10^{-3}$	
Γ_{225}	$\gamma\omega\omega$	$(1.61 \pm 0.33) \times 10^{-3}$	
Γ_{226}	$\gamma\eta(1405/1475) \rightarrow \gamma\rho^0\rho^0$	$(1.7 \pm 0.4) \times 10^{-3}$	S=1.3
Γ_{227}	$\gamma f_2(1270)$	$(1.64 \pm 0.12) \times 10^{-3}$	S=1.3
Γ_{228}	$\gamma f_2(1270) \rightarrow \gamma K_S^0 K_S^0$	$(2.58 \begin{smallmatrix} + 0.60 \\ - 0.22 \end{smallmatrix}) \times 10^{-5}$	
Γ_{229}	$\gamma f_0(1370) \rightarrow \gamma K\bar{K}$	$(4.2 \pm 1.5) \times 10^{-4}$	
Γ_{230}	$\gamma f_0(1370) \rightarrow \gamma K_S^0 K_S^0$	$(1.1 \pm 0.4) \times 10^{-5}$	
Γ_{231}	$\gamma f_0(1500) \rightarrow \gamma K_S^0 K_S^0$	$(1.59 \begin{smallmatrix} + 0.24 \\ - 0.60 \end{smallmatrix}) \times 10^{-5}$	

Γ_{232}	$\gamma f_0(1710) \rightarrow \gamma K \bar{K}$	$(9.5 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{1.0}{0.5}) \times 10^{-4}$	S=1.5
Γ_{233}	$\gamma f_0(1710) \rightarrow \gamma \pi \pi$	$(3.8 \pm 0.5) \times 10^{-4}$	
Γ_{234}	$\gamma f_0(1710) \rightarrow \gamma \omega \omega$	$(3.1 \pm 1.0) \times 10^{-4}$	
Γ_{235}	$\gamma f_0(1710) \rightarrow \gamma \eta \eta$	$(2.4 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{1.2}{0.7}) \times 10^{-4}$	
Γ_{236}	$\gamma \eta$	$(1.108 \pm 0.027) \times 10^{-3}$	
Γ_{237}	$\gamma f_1(1420) \rightarrow \gamma K \bar{K} \pi$	$(7.9 \pm 1.3) \times 10^{-4}$	
Γ_{238}	$\gamma f_1(1285)$	$(6.1 \pm 0.8) \times 10^{-4}$	
Γ_{239}	$\gamma f_1(1510) \rightarrow \gamma \eta \pi^+ \pi^-$	$(4.5 \pm 1.2) \times 10^{-4}$	
Γ_{240}	$\gamma f_2'(1525)$	$(5.7 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.8}{0.5}) \times 10^{-4}$	S=1.5
Γ_{241}	$\gamma f_2'(1525) \rightarrow \gamma K_S^0 K_S^0$	$(8.0 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.7}{0.5}) \times 10^{-5}$	
Γ_{242}	$\gamma f_2'(1525) \rightarrow \gamma \eta \eta$	$(3.4 \pm 1.4) \times 10^{-5}$	
Γ_{243}	$\gamma f_2(1640) \rightarrow \gamma \omega \omega$	$(2.8 \pm 1.8) \times 10^{-4}$	
Γ_{244}	$\gamma f_2(1910) \rightarrow \gamma \omega \omega$	$(2.0 \pm 1.4) \times 10^{-4}$	
Γ_{245}	$\gamma f_0(1750) \rightarrow \gamma K_S^0 K_S^0$	$(1.11 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.20}{0.33}) \times 10^{-5}$	
Γ_{246}	$\gamma f_0(1800) \rightarrow \gamma \omega \phi$	$(2.5 \pm 0.6) \times 10^{-4}$	
Γ_{247}	$\gamma f_2(1810) \rightarrow \gamma \eta \eta$	$(5.4 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{3.5}{2.4}) \times 10^{-5}$	
Γ_{248}	$\gamma f_2(1950) \rightarrow$ $\gamma K^*(892) \bar{K}^*(892)$	$(7.0 \pm 2.2) \times 10^{-4}$	
Γ_{249}	$\gamma K^*(892) \bar{K}^*(892)$	$(4.0 \pm 1.3) \times 10^{-3}$	
Γ_{250}	$\gamma \phi \phi$	$(4.0 \pm 1.2) \times 10^{-4}$	S=2.1
Γ_{251}	$\gamma p \bar{p}$	$(3.8 \pm 1.0) \times 10^{-4}$	
Γ_{252}	$\gamma \eta(2225)$	$(3.14 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.50}{0.19}) \times 10^{-4}$	
Γ_{253}	$\gamma \eta(1760) \rightarrow \gamma \rho^0 \rho^0$	$(1.3 \pm 0.9) \times 10^{-4}$	
Γ_{254}	$\gamma \eta(1760) \rightarrow \gamma \omega \omega$	$(1.98 \pm 0.33) \times 10^{-3}$	
Γ_{255}	$\gamma \eta(1760) \rightarrow \gamma \gamma \gamma$	$< 4.80 \times 10^{-6}$	CL=90%
Γ_{256}	$\gamma X(1835) \rightarrow \gamma \pi^+ \pi^- \eta'$	$(2.77 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.34}{0.40}) \times 10^{-4}$	S=1.1
Γ_{257}	$\gamma X(1835) \rightarrow \gamma p \bar{p}$	$(7.7 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{1.5}{0.9}) \times 10^{-5}$	
Γ_{258}	$\gamma X(1835) \rightarrow \gamma K_S^0 K_S^0 \eta$	$(3.3 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{2.0}{1.3}) \times 10^{-5}$	
Γ_{259}	$\gamma X(1835) \rightarrow \gamma \gamma \phi(1020)$		
Γ_{260}	$\gamma X(1835) \rightarrow \gamma \gamma \gamma$	$< 3.56 \times 10^{-6}$	CL=90%
Γ_{261}	$\gamma X(1840) \rightarrow \gamma 3(\pi^+ \pi^-)$	$(2.4 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.7}{0.8}) \times 10^{-5}$	
Γ_{262}	$\gamma (K \bar{K} \pi) [J^{PC} = 0^{-+}]$	$(7 \pm 4) \times 10^{-4}$	S=2.1
Γ_{263}	$\gamma \pi^0$	$(3.56 \pm 0.17) \times 10^{-5}$	
Γ_{264}	$\gamma p \bar{p} \pi^+ \pi^-$	$< 7.9 \times 10^{-4}$	CL=90%
Γ_{265}	$\gamma \Lambda \bar{\Lambda}$	$< 1.3 \times 10^{-4}$	CL=90%
Γ_{266}	$\gamma f_0(2100) \rightarrow \gamma \eta \eta$	$(1.13 \begin{smallmatrix} + \\ - \end{smallmatrix} \frac{0.60}{0.30}) \times 10^{-4}$	
Γ_{267}	$\gamma f_0(2100) \rightarrow \gamma \pi \pi$	$(6.2 \pm 1.0) \times 10^{-4}$	

Γ_{268}	$\gamma f_0(2200)$			
Γ_{269}	$\gamma f_0(2200) \rightarrow \gamma K \bar{K}$	$(5.9 \pm 1.3) \times 10^{-4}$		
Γ_{270}	$\gamma f_0(2200) \rightarrow \gamma K_S^0 K_S^0$	$(2.72 \pm_{-0.50}^{0.19}) \times 10^{-4}$		
Γ_{271}	$\gamma f_J(2220)$			
Γ_{272}	$\gamma f_J(2220) \rightarrow \gamma \pi \pi$	< 3.9	$\times 10^{-5}$	CL=90%
Γ_{273}	$\gamma f_J(2220) \rightarrow \gamma K \bar{K}$	< 4.1	$\times 10^{-5}$	CL=90%
Γ_{274}	$\gamma f_J(2220) \rightarrow \gamma p \bar{p}$	$(1.5 \pm 0.8) \times 10^{-5}$		
Γ_{275}	$\gamma f_0(2330) \rightarrow \gamma K_S^0 K_S^0$	$(4.9 \pm 0.7) \times 10^{-5}$		
Γ_{276}	$\gamma f_2(2340) \rightarrow \gamma \eta \eta$	$(5.6 \pm_{-2.2}^{2.4}) \times 10^{-5}$		
Γ_{277}	$\gamma f_2(2340) \rightarrow \gamma K_S^0 K_S^0$	$(5.5 \pm_{-1.5}^{4.0}) \times 10^{-5}$		
Γ_{278}	$\gamma f_0(1500) \rightarrow \gamma \pi \pi$	$(1.09 \pm 0.24) \times 10^{-4}$		
Γ_{279}	$\gamma f_0(1500) \rightarrow \gamma \eta \eta$	$(1.7 \pm_{-1.4}^{0.6}) \times 10^{-5}$		
Γ_{280}	$\gamma A \rightarrow \gamma \text{invisible}$	$[e] < 6.3$	$\times 10^{-6}$	CL=90%
Γ_{281}	$\gamma A^0 \rightarrow \gamma \mu^+ \mu^-$	$[f] < 5$	$\times 10^{-6}$	CL=90%

Dalitz decays

Γ_{282}	$\pi^0 e^+ e^-$	$(7.6 \pm 1.4) \times 10^{-7}$		
Γ_{283}	$\eta e^+ e^-$	$(1.43 \pm 0.07) \times 10^{-5}$		
Γ_{284}	$\eta'(958) e^+ e^-$	$(6.59 \pm 0.18) \times 10^{-5}$		
Γ_{285}	$\eta U \rightarrow \eta e^+ e^-$	< 9.11	$\times 10^{-7}$	CL=90%
Γ_{286}	$\eta'(958) U \rightarrow \eta'(958) e^+ e^-$	< 2.0	$\times 10^{-7}$	CL=90%

Weak decays

Γ_{287}	$D^- e^+ \nu_e + \text{c.c.}$	< 1.2	$\times 10^{-5}$	CL=90%
Γ_{288}	$\bar{D}^0 e^+ e^- + \text{c.c.}$	< 8.5	$\times 10^{-8}$	CL=90%
Γ_{289}	$D_s^- e^+ \nu_e + \text{c.c.}$	< 1.3	$\times 10^{-6}$	CL=90%
Γ_{290}	$D_s^{*-} e^+ \nu_e + \text{c.c.}$	< 1.8	$\times 10^{-6}$	CL=90%
Γ_{291}	$D^- \pi^+ + \text{c.c.}$	< 7.5	$\times 10^{-5}$	CL=90%
Γ_{292}	$\bar{D}^0 \bar{K}^0 + \text{c.c.}$	< 1.7	$\times 10^{-4}$	CL=90%
Γ_{293}	$\bar{D}^0 \bar{K}^{*0} + \text{c.c.}$	< 2.5	$\times 10^{-6}$	CL=90%
Γ_{294}	$D_s^- \pi^+ + \text{c.c.}$	< 1.3	$\times 10^{-4}$	CL=90%
Γ_{295}	$D_s^- \rho^+ + \text{c.c.}$	< 1.3	$\times 10^{-5}$	CL=90%

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

Γ_{296}	$\gamma \gamma$	C	< 2.7	$\times 10^{-7}$	CL=90%
Γ_{297}	$\gamma \phi$	C	< 1.4	$\times 10^{-6}$	CL=90%
Γ_{298}	$e^\pm \mu^\mp$	LF	< 1.6	$\times 10^{-7}$	CL=90%
Γ_{299}	$e^\pm \tau^\mp$	LF	< 8.3	$\times 10^{-6}$	CL=90%
Γ_{300}	$\mu^\pm \tau^\mp$	LF	< 2.0	$\times 10^{-6}$	CL=90%

Other decays

Γ_{301}	invisible	< 7	$\times 10^{-4}$	CL=90%
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- [a] For $E_\gamma > 100$ MeV.
- [b] The value is for the sum of the charge states or particle/antiparticle states indicated.
- [c] Includes $p\bar{p}\pi^+\pi^-\gamma$ and excludes $p\bar{p}\eta$, $p\bar{p}\omega$, $p\bar{p}\eta'$.
- [d] See the “Note on the $\eta(1405)$ ” in the $\eta(1405)$ Particle Listings.
- [e] For a narrow state A with mass less than 960 MeV.
- [f] For a narrow scalar or pseudoscalar A^0 with mass 0.21–3.0 GeV.

$J/\psi(1S)$ 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
5.53 \pm 0.10 OUR AVERAGE				
$5.550 \pm 0.056 \pm 0.089$		¹ ANASHIN	18A	KEDR e^+e^-
$5.36^{+0.29}_{-0.28}$		² HSUEH	92	RVUE See Υ mini-review
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$5.58 \pm 0.05 \pm 0.08$		³ ABLIKIM	16Q	BES3 $3.773 e^+e^- \rightarrow \mu^+\mu^-\gamma$
5.71 ± 0.16	13k	⁴ ADAMS	06A	CLEO $e^+e^- \rightarrow \mu^+\mu^-\gamma$
5.57 ± 0.19	7.8k	⁴ AUBERT	04	BABR $e^+e^- \rightarrow \mu^+\mu^-\gamma$
5.14 ± 0.39		BAI	95B	BES e^+e^-
4.72 ± 0.35		ALEXANDER	89	RVUE See Υ mini-review
4.4 ± 0.6		² BRANDELIK	79C	DASP e^+e^-
4.6 ± 0.8		⁵ BALDINI-...	75	FRAG e^+e^-
4.8 ± 0.6		BOYARSKI	75	MRK1 e^+e^-
4.6 ± 1.0		ESPOSITO	75B	FRAM e^+e^-

¹ From the cross sections of $e^+e^- \rightarrow e^+e^-$ and $e^+e^- \rightarrow \text{hadrons}$ near the $J/\psi(1S)$ peak.

² From a simultaneous fit to e^+e^- , $\mu^+\mu^-$, and hadronic channels assuming $\Gamma(e^+e^-) = \Gamma(\mu^+\mu^-)$.

³ Using $B(J/\psi \rightarrow \mu^+\mu^-) = (5.973 \pm 0.007 \pm 0.037)\%$ from ABLIKIM 13R.

⁴ Calculated by us from the reported values of $\Gamma(e^+e^-) \times B(\mu^+\mu^-)$ using $B(\mu^+\mu^-) = (5.93 \pm 0.06)\%$.

⁵ Assuming equal partial widths for e^+e^- and $\mu^+\mu^-$.

$\Gamma(\mu^+\mu^-)$

Γ_7

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_{296}

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
4.884 ± 0.048 ± 0.078	¹ ANASHIN	18A KEDR	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •			
4 ± 0.8	² BALDINI-...	75 FRAG	e^+e^-
3.9 ± 0.8	² ESPOSITO	75B FRAM	e^+e^-

¹ From the cross sections of $e^+e^- \rightarrow e^+e^-$ and $e^+e^- \rightarrow \text{hadrons}$ near the $J/\psi(1S)$ peak.

² 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
333.1 ± 6.6 ± 4.0	¹ ANASHIN	18A KEDR	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •			
332.3 ± 6.4 ± 4.8	ANASHIN	10 KEDR	3.097 $e^+e^- \rightarrow e^+e^-$
350 ± 20	BRANDELIK	79C DASP	e^+e^-
320 ± 70	² BALDINI-...	75 FRAG	e^+e^-
340 ± 90	² ESPOSITO	75B FRAM	e^+e^-
360 ± 100	² FORD	75 SPEC	e^+e^-

¹ From the cross sections of $e^+e^- \rightarrow e^+e^-$ and $e^+e^- \rightarrow \text{hadrons}$ near the $J/\psi(1S)$ peak.

² Data redundant with branching ratios or partial widths above.

$\Gamma(\mu^+\mu^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_7\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
333 ± 4 OUR AVERAGE				
333.4 ± 2.5 ± 4.4		ABLIKIM	16Q BES3	3.773 $e^+e^- \rightarrow \mu^+\mu^-\gamma$
331.8 ± 5.2 ± 6.3		ANASHIN	10 KEDR	3.097 $e^+e^- \rightarrow \mu^+\mu^-$
338.4 ± 5.8 ± 7.1	13k	ADAMS	06A CLEO	$e^+e^- \rightarrow \mu^+\mu^-\gamma$
330.1 ± 7.7 ± 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 ± 90		DASP	75 DASP	e^+e^-
380 ± 50		¹ ESPOSITO	75B FRAM	e^+e^-

¹ Data redundant with branching ratios or partial widths above.

$\Gamma(\rho(770)^\mp K^\pm K_S^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{10}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
10.4 ± 1.0 ± 1.9	130	LEES	17D BABR	$e^+e^- \rightarrow K_S^0 K^\pm \pi^\mp \pi^0 \gamma$

$\Gamma(\omega\pi^+\pi^-\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{23}\Gamma_5/\Gamma$

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

$\Gamma(\omega\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{24}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
53.6±5.0±0.4	788	¹ AUBERT	07AU BABR	10.6 $e^+e^- \rightarrow \omega\pi^+\pi^-\gamma$

¹ 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 $B(\omega(782) \rightarrow \pi^+\pi^-\pi^0) = (89.3 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\omega\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{59}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
27.8±3.5±0.2	398	¹ LEES	18E BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-3\pi^0\gamma$

¹ LEES 18E reports [$\Gamma(J/\psi(1S) \rightarrow \omega\pi^0\pi^0) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}$] \times [$B(\omega(782) \rightarrow \pi^+\pi^-\pi^0)$] = $24.8 \pm 1.8 \pm 2.5$ eV which we divide by our best value $B(\omega(782) \rightarrow \pi^+\pi^-\pi^0) = (89.3 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^*(892)^0\bar{K}^*(892)^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{26}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
1.28±0.34±0.07	47±12	¹ LEES	12F BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma$

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

1.28±0.40±0.11 25±8 ^{1,2} AUBERT 07AK BABR 10.6 $e^+e^- \rightarrow \pi^+\pi^-K^+K^-\gamma$

¹ Dividing by $(2/3)^2$ to take twice into account that $B(K^{*0} \rightarrow K^+\pi^-) = 2/3 B(K^{*0} \rightarrow K\pi)$.

² Superseded by LEES 12F.

$\Gamma(K^*(892)^\pm K^*(892)^\mp) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{27}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
0.80±0.48±0.32	1±5	¹ LEES	14H BABR	$e^+e^- \rightarrow \pi^+\pi^-K_S^0 K_S^0 \gamma$

¹ Dividing by $(1/4)^2$ to take twice into account $B(K^*(892) \rightarrow K_S^0 \pi) = 1/4$.

$\Gamma(K_S^0\pi^- K^*(892)^+ + \text{c.c.}) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{29}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
11.0±2.8 OUR AVERAGE				
9.2±1.2±3.2	64	¹ LEES	17D BABR	$e^+e^- \rightarrow K_S^0 K^\pm \pi^\mp \pi^0 \gamma$
14.8±4.8±1.2	53	² LEES	14H BABR	$e^+e^- \rightarrow \pi^+\pi^- K_S^0 K_S^0 \gamma$

¹ Dividing by 1/2 to take into account $B(K^*(892)^\pm \rightarrow K^\pm \pi^\mp) = 1/2$.

² Dividing by 1/4 to take into account $B(K^*(892) \rightarrow K_S^0 \pi) = 1/4$.

$\Gamma(K_S^0\pi^- K^*(892)^+ + \text{c.c.} \rightarrow K_S^0 K_S^0 \pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{30}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
3.7±1.2±0.3	53	LEES	14H BABR	$e^+e^- \rightarrow \pi^+\pi^- K_S^0 K_S^0 \gamma$

$\Gamma(K^*(892)^0 \bar{K}_2^*(1430)^0 + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{43} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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25.8 ± 1.4 ± 0.6	710	1,2,3 LEES	12F BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

33 ± 4 ± 1	317	2,4 AUBERT	07AK BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma$
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¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow K^*(892)^0 \bar{K}_2^*(1430)^0 + \text{c.c.}) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(K_2^*(1430) \rightarrow K\pi)] = 12.89 \pm 0.54 \pm 0.41$ eV which we divide by our best value $B(K_2^*(1430) \rightarrow K\pi) = (49.9 \pm 1.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

³ The $K_2^*(1430)$ cannot be distinguished from the $K_0^*(1430)$.

⁴ Superseded by LEES 12F. AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow K^*(892)^0 \bar{K}_2^*(1430)^0 + \text{c.c.}) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(K_2^*(1430) \rightarrow K\pi)] = 16.4 \pm 1.1 \pm 1.4$ eV which we divide by our best value $B(K_2^*(1430) \rightarrow K\pi) = (49.9 \pm 1.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^*(892)^+ K_2^*(1430)^- + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{44} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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18.6 ± 16.1 ± 0.4	8 ± 8	1,2 LEES	14H BABR	$e^+ e^- \rightarrow \pi^+ \pi^- K_S^0 K_S^0 \gamma$
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¹ Dividing by $(1/4)^2$ to take into account $B(K^*(892) \rightarrow K_S^0 \pi) = 1/4$ and $B(K^*(1430) \rightarrow K_S^0 \pi) = 1/4 B(K^*(1430) \rightarrow K\pi)$.

² LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow K^*(892)^+ K_2^*(1430)^- + \text{c.c.}) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(K_2^*(1430) \rightarrow K\pi)] = 9.28 \pm 8.0 \pm 0.32$ eV which we divide by our best value $B(K_2^*(1430) \rightarrow K\pi) = (49.9 \pm 1.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^*(892)^+ K_2^*(1430)^- + \text{c.c.} \rightarrow K^*(892)^+ K_S^0 \pi^- + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{45} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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2.32 ± 2.00 ± 0.08	8 ± 8	¹ LEES	14H BABR	$e^+ e^- \rightarrow \pi^+ \pi^- K_S^0 K_S^0 \gamma$
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¹ Dividing by 1/4 to take into account $B(K^*(892) \rightarrow K_S^0 \pi) = 1/4$.

$\Gamma(K^*(892)^0 \bar{K}_2^*(1770)^0 + \text{c.c.} \rightarrow K^*(892)^0 K^- \pi^+ + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{46} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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3.8 ± 0.4 ± 0.3	110 ± 14	¹ AUBERT	07AK BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma$
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¹ Dividing by 2/3 to take into account that $B(K^{*0} \rightarrow K^+ \pi^-) = 2/3$.

$\Gamma(K^+ K^*(892)^- + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{50} \Gamma_5 / \Gamma$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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29.0 ± 1.7 ± 1.3	AUBERT	08S BABR	10.6 $e^+ e^- \rightarrow K^+ K^*(892)^- \gamma$
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$$\Gamma(K^+ K^*(892)^- + \text{c.c.} \rightarrow K^+ K^- \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{51} \Gamma_5 / \Gamma$$

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

$$\Gamma(K^+ K^*(892)^- + \text{c.c.} \rightarrow K^0 K^\pm \pi^\mp + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{52} \Gamma_5 / \Gamma$$

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

$$\Gamma(K^0 \bar{K}^*(892)^0 + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{53} \Gamma_5 / \Gamma$$

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

$$\Gamma(K^0 \bar{K}^*(892)^0 + \text{c.c.} \rightarrow K^0 K^\pm \pi^\mp + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{54} \Gamma_5 / \Gamma$$

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

$$\Gamma(K_S^0 K^*(892)^0 \rightarrow \gamma K_S^0 K_S^0) / \Gamma_{\text{total}} \quad \Gamma_{31} / \Gamma$$

VALUE (units 10^{-6})	DOCUMENT ID	TECN	COMMENT
$6.28^{+0.16+0.59}_{-0.17-0.52}$	ABLIKIM	18AA	BES3 $J/\psi \rightarrow \gamma K_S^0 K_S^0$

$$\Gamma(\bar{K}^*(892)^0 K^+ \pi^- + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{56} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
$42.6 \pm 4.8 \pm 7.2$	99	¹ LEES	17D	BABR $e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp \pi^0 \gamma$

¹ Dividing by 1/6 to account for $B(K^*(892)^0 \rightarrow K_S^0 \pi^0) = 1/6$.

$$\Gamma(K^*(892)^\pm K^\mp \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{57} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
$22.8 \pm 2.8 \pm 6.8$	80	¹ LEES	17D	BABR $e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp \pi^0 \gamma$

¹ Dividing by 1/4 to account for $B(K^*(892)^\pm \rightarrow K_S^0 \pi^\pm) = 1/4$.

$$\Gamma(K^*(892)^0 K_S^0 \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{58} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
$3.60 \pm 0.75 \pm 2.25$	34	¹ LEES	17D	BABR $e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp \pi^0 \gamma$

¹ Dividing by 2/3 to account for $B(K^*(892)^0 \rightarrow K^+ \pi^-) = 2/3$.

$$\Gamma(\eta K^\pm K_S^0 \pi^\mp) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{64} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
$7.3 \pm 1.4 \pm 0.4$	44	LEES	17D	BABR $e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp \pi^0 \gamma$

$$\Gamma(\omega K \bar{K}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{66} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
$3.70 \pm 1.98 \pm 0.03$	24	¹ AUBERT	07AU	BABR $10.6 e^+ e^- \rightarrow \omega K^+ K^- \gamma$

¹ AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow \omega K \bar{K}) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\omega(782) \rightarrow \pi^+ \pi^- \pi^0)] = 3.3 \pm 1.3 \pm 1.2 \text{ eV}$ which we divide by our best value $B(\omega(782) \rightarrow \pi^+ \pi^- \pi^0) = (89.3 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi 2(\pi^+ \pi^-)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{68} \Gamma_5 / \Gamma$

VALUE (10^{-2} keV)	EVTS	DOCUMENT ID	TECN	COMMENT
0.95 ± 0.19 ± 0.01	35	¹ AUBERT	06D BABR	10.6 $e^+ e^- \rightarrow \phi 2(\pi^+ \pi^-) \gamma$

¹ AUBERT 06D reports $[\Gamma(J/\psi(1S) \rightarrow \phi 2(\pi^+ \pi^-)) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = (0.47 \pm 0.09 \pm 0.03) \times 10^{-2}$ keV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi K_S^0 K_S^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{72} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
3.25 ± 0.84 ± 0.03	29	¹ LEES	14H BABR	$e^+ e^- \rightarrow K_S^0 K_S^0 K^+ K^- \gamma$

¹ LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow \phi K_S^0 K_S^0) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = 1.6 \pm 0.4 \pm 0.1$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi K^+ K^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{74} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
4.59 ± 0.62 ± 0.05	163	¹ LEES	12F BABR	10.6 $e^+ e^- \rightarrow K^+ K^- K^+ K^- \gamma$

¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow \phi K^+ K^-) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = 2.26 \pm 0.26 \pm 0.16$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi f_2(1270)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{75} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
1.79 ± 0.32^{+0.02}_{-0.06}	61	^{1,2,3} LEES	12F BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma$

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

4.08 ± 0.73 ^{+0.04} _{-0.14}	44	^{2,4} AUBERT	07AK BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^- \gamma$
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¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_2(1270)) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi \pi)] = 1.51 \pm 0.25 \pm 0.10$ eV which we divide by our best value $B(f_2(1270) \rightarrow \pi \pi) = (84.2^{+2.9}_{-0.9}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Using $B(\phi \rightarrow K^+ K^-) = (48.9 \pm 0.5)\%$.

³ Using $\pi^+ \pi^-$ invariant mass between 1.1 and 1.5 GeV. May include other sources such as $f_0(1370)$.

⁴ Superseded by LEES 12F. AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_2(1270)) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi \pi)] = 3.44 \pm 0.55 \pm 0.28$ eV which we divide by our best value $B(f_2(1270) \rightarrow \pi \pi) = (84.2^{+2.9}_{-0.9}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+ K^- f'_2(1525)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{79} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
5.8±1.9±0.1	16	^{1,2} LEES	14H BABR	$e^+ e^- \rightarrow K_S^0 K_S^0 K^+ K^- \gamma$

¹ Dividing by 1/4 to take into account $B(f'_2(1525) \rightarrow K_S^0 K_S^0) = 1/4 B(f'_2(1525) \rightarrow K \bar{K})$.

² LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow K^+ K^- f'_2(1525)) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(f'_2(1525) \rightarrow K \bar{K})] = 5.12 \pm 1.68 \pm 0.20$ eV which we divide by our best value $B(f'_2(1525) \rightarrow K \bar{K}) = (88.7 \pm 2.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi f'_2(1525)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{80} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
8.1±3.2±0.2	11	^{1,2} LEES	14H BABR	$e^+ e^- \rightarrow K_S^0 K_S^0 K^+ K^- \gamma$

¹ Dividing by 1/4 to take into account $B(f'_2(1525) \rightarrow K_S^0 K_S^0) = 1/4 B(f'_2(1525) \rightarrow K \bar{K})$ and using $B(\phi \rightarrow K^+ K^-) = (48.9 \pm 0.5)\%$.

² LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow \phi f'_2(1525)) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(f'_2(1525) \rightarrow K \bar{K})] = 7.2 \pm 2.8 \pm 0.3$ eV which we divide by our best value $B(f'_2(1525) \rightarrow K \bar{K}) = (88.7 \pm 2.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi \pi^+ \pi^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{81} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
4.47±0.35 OUR AVERAGE				

4.45±0.49±0.05	181	¹ LEES	12F BABR	$10.6 e^+ e^- \rightarrow K^+ K^- \pi^+ \pi^- \gamma$
4.50±0.48±0.05	254 ± 23	² SHEN	09 BELL	$10.6 e^+ e^- \rightarrow K^+ K^- \pi^+ \pi^- \gamma$

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

5.3 ± 0.7 ± 0.1	103	³ AUBERT, BE 06D	BABR	$10.6 e^+ e^- \rightarrow K^+ K^- \pi^+ \pi^- \gamma$
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¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow \phi \pi^+ \pi^-) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = 2.19 \pm 0.23 \pm 0.07$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

³ Superseded by LEES 12F. AUBERT, BE 06D reports $[\Gamma(J/\psi(1S) \rightarrow \phi \pi^+ \pi^-) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = 2.61 \pm 0.30 \pm 0.18$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$$\Gamma(\phi\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_{82}\Gamma_5/\Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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2.76±0.57±0.03	45	¹ LEES	12F BABR	10.6 e ⁺ e ⁻ → K ⁺ K ⁻ π ⁰ π ⁰ γ
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• • • We do not use the following data for averages, fits, limits, etc. • • •

3.13±0.88±0.03	23	² AUBERT,BE	06D BABR	10.6 e ⁺ e ⁻ → K ⁺ K ⁻ π ⁰ π ⁰ γ
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¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow \phi\pi^0\pi^0) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+K^-)] = 1.36 \pm 0.27 \pm 0.07$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Superseded by LEES 12F. AUBERT,BE 06D reports $[\Gamma(J/\psi(1S) \rightarrow \phi\pi^0\pi^0) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+K^-)] = 1.54 \pm 0.40 \pm 0.16$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$$\Gamma(\phi\eta) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_{85}\Gamma_5/\Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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6.1±2.7±0.4	6	¹ AUBERT	07AU BABR	10.6 e ⁺ e ⁻ → φηγ
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¹ AUBERT 07AU quotes $\Gamma_{ee}^{J/\psi} \cdot B(J/\psi \rightarrow \phi\eta) \cdot B(\phi \rightarrow K^+K^-) \cdot B(\eta \rightarrow 3\pi) = 0.84 \pm 0.37 \pm 0.05$ eV.

$$\Gamma(\phi f_0(980) \rightarrow \phi\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_{93}\Gamma_5/\Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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1.44±0.19 OUR AVERAGE

1.40±0.25±0.02	57 ± 9	¹ LEES	12F BABR	10.6 e ⁺ e ⁻ → π ⁺ π ⁻ K ⁺ K ⁻ γ
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1.48±0.27±0.09	60 ± 11	² SHEN	09 BELL	10.6 e ⁺ e ⁻ → K ⁺ K ⁻ π ⁺ π ⁻ γ
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• • • We do not use the following data for averages, fits, limits, etc. • • •

1.02±0.24±0.01	20 ± 5	³ AUBERT	07AK BABR	10.6 e ⁺ e ⁻ → π ⁺ π ⁻ K ⁺ K ⁻ γ
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¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_0(980) \rightarrow \phi\pi^+\pi^-) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+K^-)] = 0.69 \pm 0.11 \pm 0.05$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Multiplied by 2/3 to take into account the φπ⁺π⁻ mode only. Using $B(\phi \rightarrow K^+K^-) = (49.2 \pm 0.6)\%$.

³ Superseded by LEES 12F. AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_0(980) \rightarrow \phi\pi^+\pi^-) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+K^-)] = 0.50 \pm 0.11 \pm 0.04$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$$\Gamma(\phi f_0(980) \rightarrow \phi\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_{94}\Gamma_5/\Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
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0.98±0.26±0.01	16 ± 4	¹ LEES	12F BABR	10.6 e ⁺ e ⁻ → π ⁰ π ⁰ K ⁺ K ⁻ γ
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.95±0.40±0.01	7.0 ± 2.8	² AUBERT	07AK BABR	10.6 e ⁺ e ⁻ → π ⁰ π ⁰ K ⁺ K ⁻ γ
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¹ LEES 12F reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_0(980) \rightarrow \phi \pi^0 \pi^0) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = 0.48 \pm 0.12 \pm 0.05$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Superseded by LEES 12F. AUBERT 07AK reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_0(980) \rightarrow \phi \pi^0 \pi^0) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\phi(1020) \rightarrow K^+ K^-)] = 0.47 \pm 0.19 \pm 0.05$ eV which we divide by our best value $B(\phi(1020) \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\eta \pi^+ \pi^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{104} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
2.3 ± 0.4 OUR AVERAGE				
2.34 ± 0.43 ± 0.16	49	LEES	18 BABR	$e^+ e^- \rightarrow \eta \pi^+ \pi^- \gamma$
2.23 ± 0.97 ± 0.03	9	¹ AUBERT	07AU BABR	10.6 $e^+ e^- \rightarrow \eta \pi^+ \pi^- \gamma$

¹ AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow \eta \pi^+ \pi^-) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\eta \rightarrow \pi^+ \pi^- \pi^0)] = 0.51 \pm 0.22 \pm 0.03$ eV which we divide by our best value $B(\eta \rightarrow \pi^+ \pi^- \pi^0) = (22.92 \pm 0.28) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K_S^0 \pi^- K_2^*(1430)^+ + \text{c.c.}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{113} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
20.1 ± 9.8 ± 0.5	35	^{1,2} LEES	14H BABR	$e^+ e^- \rightarrow \pi^+ \pi^- K_S^0 K_S^0 \gamma$

¹ Dividing by 1/4 to take into account $B(K^*(1430) \rightarrow K_S^0 \pi) = 1/4 B(K^*(1430) \rightarrow K \pi)$.

² LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow K_S^0 \pi^- K_2^*(1430)^+ + \text{c.c.}) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(K_2^*(1430) \rightarrow K \pi)] = 10.0 \pm 4.8 \pm 0.8$ eV which we divide by our best value $B(K_2^*(1430) \rightarrow K \pi) = (49.9 \pm 1.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(2(\pi^+ \pi^-) \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{133} \Gamma_5 / \Gamma$

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

$\Gamma(\pi^+ \pi^- \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{135} \Gamma_5 / \Gamma$

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

$\Gamma(\pi^+ \pi^- \pi^0 \pi^0 \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{136} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
150.0 ± 4.0 ± 15.0	2.3k	LEES	18E BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- 3\pi^0 \gamma$

$\Gamma(\rho^\pm \pi^\mp \pi^0 \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{137} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
78.0 ± 9.0 ± 8.0	1.2k	LEES	18E BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- 3\pi^0 \gamma$

$\Gamma(\rho^+ \rho^- \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{138} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
33.0 ± 5.0 ± 3.3	529	LEES	18E BABR	10.6 e ⁺ e ⁻ → π ⁺ π ⁻ 3π ⁰ γ

$\Gamma(\pi^+ \pi^- \pi^0 K^+ K^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{139} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
107.0 ± 4.3 ± 6.4	768	AUBERT	07AU BABR	10.6 e ⁺ e ⁻ → K ⁺ K ⁻ π ⁺ π ⁻ π ⁰ γ

$\Gamma(\pi^+ \pi^- K^+ K^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{141} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
37.94 ± 0.81 ± 1.10	3.1k	LEES	12F BABR	10.6 e ⁺ e ⁻ → π ⁺ π ⁻ K ⁺ K ⁻ γ

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

36.3 ± 1.3 ± 2.1 1.5k ¹ AUBERT 07AK BABR 10.6 e⁺e⁻ → π⁺π⁻K⁺K⁻γ

33.6 ± 2.7 ± 2.7 233 ² AUBERT 05D BABR 10.6 e⁺e⁻ → K⁺K⁻π⁺π⁻γ

¹ Superseded by LEES 12F.

² Superseded by AUBERT 07AK.

$\Gamma(\pi^+ \pi^- K_S^0 K_L^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{142} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
20.8 ± 2.3 ± 2.1	248	LEES	14H BABR	e ⁺ e ⁻ → π ⁺ π ⁻ K _S ⁰ K _L ⁰ γ

$\Gamma(\pi^+ \pi^- K_S^0 K_S^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{143} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
9.3 ± 0.9 ± 0.5	133	LEES	14H BABR	e ⁺ e ⁻ → π ⁺ π ⁻ K _S ⁰ K _S ⁰ γ

$\Gamma(\pi^\pm \pi^0 K^\mp K_S^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{144} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
31.7 ± 1.9 ± 1.8	393	LEES	17D BABR	e ⁺ e ⁻ → K _S ⁰ K [±] π [∓] π ⁰ γ

$\Gamma(K^+ K^- K_S^0 K_S^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{145} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
2.3 ± 0.4 ± 0.1	29	LEES	14H BABR	e ⁺ e ⁻ → K _S ⁰ K _S ⁰ K ⁺ K ⁻ γ

$\Gamma(\pi^+ \pi^- K^+ K^- \eta) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{146} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
25.9 ± 3.9 ± 0.1	73	¹ AUBERT	07AU BABR	10.6 e ⁺ e ⁻ → K ⁺ K ⁻ π ⁺ π ⁻ ηγ

¹ AUBERT 07AU reports [$\Gamma(J/\psi(1S) \rightarrow \pi^+ \pi^- K^+ K^- \eta) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}$] × [B(η → 2γ)] = 10.2 ± 1.3 ± 0.8 eV which we divide by our best value B(η → 2γ) = (39.41 ± 0.20) × 10⁻². Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\pi^0 \pi^0 K^+ K^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$ $\Gamma_{147} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
11.75 ± 0.81 ± 0.90	388	LEES	12F BABR	10.6 e ⁺ e ⁻ → π ⁰ π ⁰ K ⁺ K ⁻ γ

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

13.6 ± 1.1 ± 1.3 203 ¹ AUBERT 07AK BABR 10.6 e⁺e⁻ → π⁰π⁰K⁺K⁻γ

¹ Superseded by LEES 12F.

$$\Gamma(\pi^0 \pi^0 K_S^0 K_L^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{148} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
10.3±2.3±0.5	47	LEES	17A	BABR $e^+ e^- \rightarrow K_S^0 K_L^0 \pi^0 \pi^0 \gamma$

$$\Gamma(K_S^0 K_L^0 \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{152} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
11.4±1.3±0.6	182	LEES	17A	BABR $e^+ e^- \rightarrow K_S^0 K_L^0 \pi^0 \gamma$

$$\Gamma(K^*(892)^0 \bar{K}^0 + \text{c.c.} \rightarrow K_S^0 K_L^0 \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{153} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
6.7±0.9±0.4	106	LEES	17A	BABR $e^+ e^- \rightarrow K_S^0 K_L^0 \pi^0 \gamma$

$$\Gamma(K_2^*(1430)^0 \bar{K}^0 + \text{c.c.} \rightarrow K_S^0 K_L^0 \pi^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{154} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
2.4±0.7±0.1	37	LEES	17A	BABR $e^+ e^- \rightarrow K_S^0 K_L^0 \pi^0 \gamma$

$$\Gamma(K_S^0 K_L^0 \eta) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{155} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
8.0±1.8±0.4	45	LEES	17A	BABR $e^+ e^- \rightarrow K_S^0 K_L^0 \eta \gamma$

$$\Gamma(2(\pi^+ \pi^-)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{156} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
20.4±0.9±0.4		LEES	12E	BABR $10.6 e^+ e^- \rightarrow 2\pi^+ 2\pi^- \gamma$

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

$19.5 \pm 1.4 \pm 1.3$	270	¹ AUBERT	05D	BABR $10.6 e^+ e^- \rightarrow 2(\pi^+ \pi^-) \gamma$
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¹ Superseded by LEES 12E.

$$\Gamma(3(\pi^+ \pi^-)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{157} \Gamma_5 / \Gamma$$

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

$$\Gamma(2(\pi^+ \pi^- \pi^0)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{158} \Gamma_5 / \Gamma$$

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

$$\Gamma(2(\pi^+ \pi^-) \eta) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{159} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
13.1±2.4±0.1	85	¹ AUBERT	07AU	BABR $10.6 e^+ e^- \rightarrow 2(\pi^+ \pi^-) \eta \gamma$

¹ AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow 2(\pi^+ \pi^-) \eta) \times \Gamma(J/\psi(1S) \rightarrow e^+ e^-) / \Gamma_{\text{total}}] \times [B(\eta \rightarrow 2\gamma)] = 5.16 \pm 0.85 \pm 0.39$ eV which we divide by our best value $B(\eta \rightarrow 2\gamma) = (39.41 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$$\Gamma(\pi^+ \pi^- \pi^0 \pi^0 \eta) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{161} \Gamma_5 / \Gamma$$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
12.8±1.8±2.0	203	LEES	18E	BABR $10.6 e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \pi^0 \eta \gamma$

$\Gamma(\omega\pi^0\eta) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{60}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
1.90±0.96±0.01	27	¹ LEES	18E BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0\eta\gamma$

¹ LEES 18E reports $[\Gamma(J/\psi(1S) \rightarrow \omega\pi^0\eta) \times \Gamma(J/\psi(1S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] \times [B(\omega(782) \rightarrow \pi^+\pi^-\pi^0)] = 1.7 \pm 0.8 \pm 0.3$ eV which we divide by our best value $B(\omega(782) \rightarrow \pi^+\pi^-\pi^0) = (89.3 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\rho^\pm\pi^\mp\pi^0\eta) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{162}\Gamma_5/\Gamma$

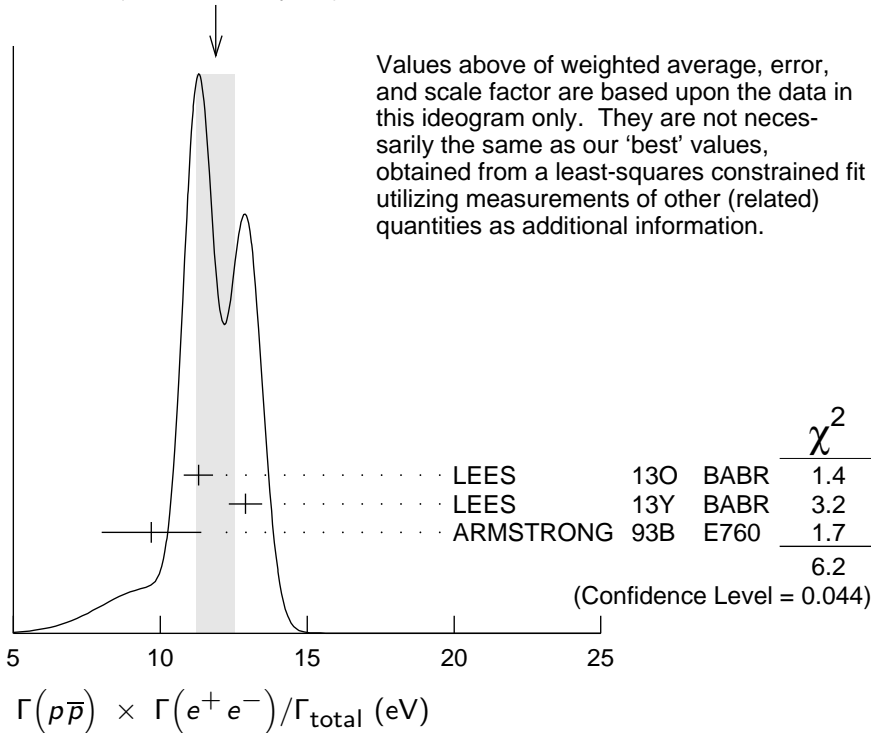
VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
10.5±4.1±1.6	168	LEES	18E BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0\eta\gamma$

$\Gamma(p\bar{p}) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_{163}\Gamma_5/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
11.9±0.6 OUR AVERAGE	Error includes scale factor of 1.8. See the ideogram below.			
11.3±0.4±0.3	821	¹ LEES	130 BABR	$e^+e^- \rightarrow p\bar{p}\gamma$
12.9±0.4±0.4	918	² LEES	13Y BABR	$e^+e^- \rightarrow p\bar{p}\gamma$
9.7±1.7		³ ARMSTRONG	93B E760	$\bar{p}p \rightarrow e^+e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
12.0±0.6±0.5	438	⁴ AUBERT	06B BABR	$e^+e^- \rightarrow p\bar{p}\gamma$

- ¹ ISR photon reconstructed in the detector
- ² ISR photon undetected
- ³ Using $\Gamma_{\text{total}} = 85.5^{+6.1}_{-5.8}$ MeV.
- ⁴ Superseded by LEES 130

WEIGHTED AVERAGE
11.9±0.6 (Error scaled by 1.8)



$\Gamma(\Sigma^0 \bar{\Sigma}^0) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{176} \Gamma_5 / \Gamma$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
6.4 ± 1.2 ± 0.6	AUBERT	07BD	BABR 10.6 e ⁺ e ⁻ → Σ ⁰ Σ ⁰ γ

$\Gamma(2(\pi^+ \pi^-) K^+ K^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{177} \Gamma_5 / \Gamma$

VALUE (10 ⁻² keV)	EVTS	DOCUMENT ID	TECN	COMMENT
2.75 ± 0.23 ± 0.17	205	AUBERT	06D	BABR 10.6 e ⁺ e ⁻ → K ⁺ K ⁻ 2(π ⁺ π ⁻) γ

$\Gamma(\Lambda \bar{\Lambda}) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{183} \Gamma_5 / \Gamma$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
10.7 ± 0.9 ± 0.7	AUBERT	07BD	BABR 10.6 e ⁺ e ⁻ → Λ Λ̄ γ

$\Gamma(2(K^+ K^-)) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{186} \Gamma_5 / \Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
4.00 ± 0.33 ± 0.29	287 ± 24	LEES	12F	BABR 10.6 e ⁺ e ⁻ → 2(K ⁺ K ⁻) γ

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

4.11 ± 0.39 ± 0.30	156 ± 15	¹ AUBERT	07AK	BABR 10.6 e ⁺ e ⁻ → 2(K ⁺ K ⁻) γ
4.0 ± 0.7 ± 0.6	38	² AUBERT	05D	BABR 10.6 e ⁺ e ⁻ → 2(K ⁺ K ⁻) γ

¹ Superseded by LEES 12F.

² Superseded by AUBERT 07AK.

$\Gamma(K^+ K^-) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}} \quad \Gamma_{188} \Gamma_5 / \Gamma$

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

1.78 ± 0.11 ± 0.05	462	¹ LEES	15J	BABR e ⁺ e ⁻ → K ⁺ K ⁻ γ
1.94 ± 0.11 ± 0.05	462	² LEES	15J	BABR e ⁺ e ⁻ → K ⁺ K ⁻ γ
1.42 ± 0.23 ± 0.08	51	³ LEES	13Q	BABR e ⁺ e ⁻ → K ⁺ K ⁻ γ

¹ sin φ > 0.

² sin φ < 0.

³ Interference with non-resonant K⁺ K⁻ production not taken into account.

J/ψ(1S) BRANCHING RATIOS

For the first four branching ratios, see also the partial widths, and (partial widths) × Γ(e⁺ e⁻) / Γ_{total} above.

$\Gamma(\text{hadrons}) / \Gamma_{\text{total}} \quad \Gamma_1 / \Gamma$

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 ⁻

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.135±0.003	1,2 SETH	04	RVUE e^+e^-
0.17 ±0.02	¹ BOYARSKI	75	MRK1 e^+e^-

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

¹Included in $\Gamma(\text{hadrons})/\Gamma_{\text{total}}$.

²Using $B(J/\psi \rightarrow \ell^+\ell^-) = (5.90 \pm 0.09)\%$ from RPP-2002 and $R = 2.28 \pm 0.04$ determined by a fit to data from BAI 00 and BAI 02C.

 $\Gamma(g g g)/\Gamma_{\text{total}}$ Γ_3/Γ

<u>VALUE (units 10^{-2})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
64.1±1.0	6 M	¹ BESSON	08	CLEO $\psi(2S) \rightarrow \pi^+\pi^- + \text{hadrons}$

¹Calculated 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 PDG 08 values of $B(\ell^+\ell^-)$, $B(\text{virtual } \gamma \rightarrow \text{hadrons})$, and $B(\gamma\eta_c)$. The statistical error is negligible and the systematic error is partially correlated with that of $\Gamma(\gamma g g)/\Gamma_{\text{total}}$ measurement of BESSON 08.

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

<u>VALUE (units 10^{-2})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
8.79±1.05	200 k	¹ BESSON	08	CLEO $\psi(2S) \rightarrow \pi^+\pi^-\gamma + \text{hadrons}$

¹Calculated 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 $\Gamma(g g g)/\Gamma_{\text{total}}$. The statistical error is negligible and the systematic error is partially correlated with that of $\Gamma(g g g)/\Gamma_{\text{total}}$ measurement of BESSON 08.

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

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

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

<u>VALUE (units 10^{-2})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
5.971±0.032 OUR AVERAGE				
5.983±0.007±0.037	720k	ABLIKIM	13R	BES3 $\psi(2S) \rightarrow J/\psi \pi^+\pi^-$
5.945±0.067±0.042	15k	LI	05C	CLEO $\psi(2S) \rightarrow J/\psi \pi^+\pi^-$
5.90 ±0.05 ±0.10		BAI	98D	BES $\psi(2S) \rightarrow J/\psi \pi^+\pi^-$
6.09 ±0.33		BAI	95B	BES e^+e^-
5.92 ±0.15 ±0.20		COFFMAN	92	MRK3 $\psi(2S) \rightarrow J/\psi \pi^+\pi^-$
6.9 ±0.9		BOYARSKI	75	MRK1 e^+e^-

 $\Gamma(e^+e^-\gamma)/\Gamma_{\text{total}}$ Γ_6/Γ

<u>VALUE (units 10^{-3})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
8.8±1.3±0.4	¹ ARMSTRONG	96	E760 $\bar{p}p \rightarrow e^+e^-\gamma$

¹For $E_\gamma > 100$ MeV.

$\Gamma(\mu^+\mu^-)/\Gamma_{\text{total}}$			Γ_7/Γ		
VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT	
5.961 ± 0.033 OUR AVERAGE					
5.973 ± 0.007 ± 0.038	770k	ABLIKIM	13R	BES3	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$
5.960 ± 0.065 ± 0.050	17k	LI	05C	CLEO	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$
5.84 ± 0.06 ± 0.10		BAI	98D	BES	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$
6.08 ± 0.33		BAI	95B	BES	$e^+ e^-$
5.90 ± 0.15 ± 0.19		COFFMAN	92	MRK3	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$
6.9 ± 0.9		BOYARSKI	75	MRK1	$e^+ e^-$

$\Gamma(e^+e^-)/\Gamma(\mu^+\mu^-)$			Γ_5/Γ_7		
VALUE	DOCUMENT ID	TECN	COMMENT		
1.0016 ± 0.0031 OUR AVERAGE					
1.0022 ± 0.0044 ± 0.0048	¹ AULCHENKO 14	KEDR	3.097	$e^+ e^- \rightarrow e^+ e^-, \mu^+ \mu^-$	
1.0017 ± 0.0017 ± 0.0033	² ABLIKIM 13R	BES3	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$		
1.002 ± 0.021 ± 0.013	³ ANASHIN 10	KEDR	3.097	$e^+ e^- \rightarrow e^+ e^-, \mu^+ \mu^-$	
0.997 ± 0.012 ± 0.006	LI 05C	CLEO	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$		
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
1.011 ± 0.013 ± 0.016	BAI 98D	BES	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$		
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	$e^+ e^-$		

¹ From 235.3k $J/\psi \rightarrow e^+ e^-$ and 156.6k $J/\psi \rightarrow \mu^+ \mu^-$ observed events.

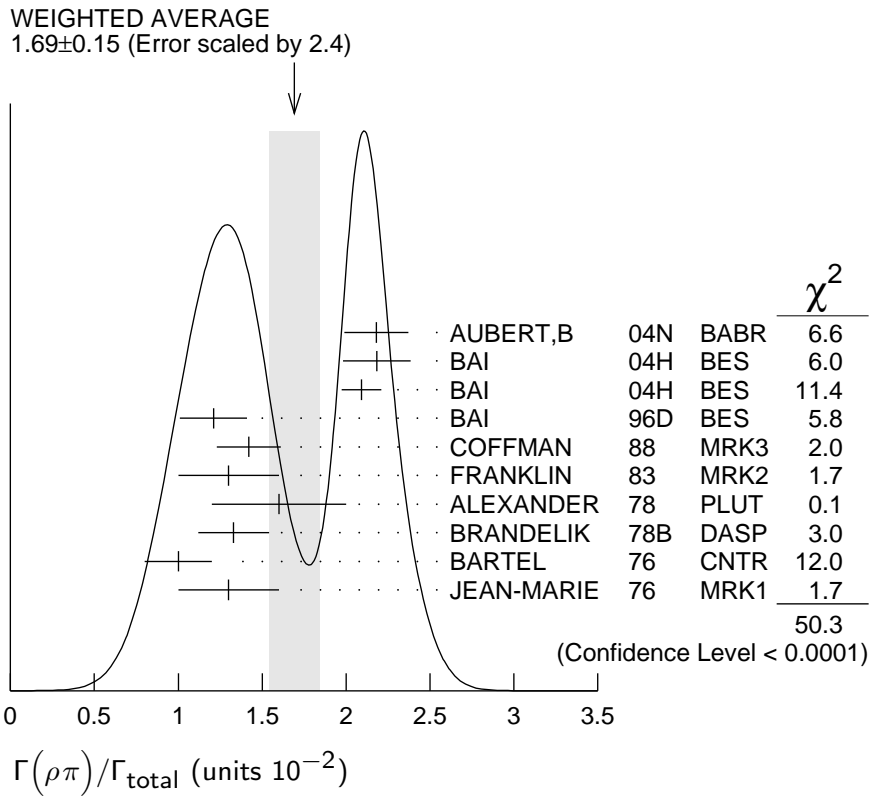
² Not independent of the corresponding measurements of $\Gamma(e^+ e^-)/\Gamma_{\text{total}}$ and $\Gamma(\mu^+ \mu^-)/\Gamma_{\text{total}}$.

³ Not independent of the corresponding measurements of $\Gamma(e^+ e^-) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ and $\Gamma(\mu^+ \mu^-) \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$.

———— HADRONIC DECAYS ————

$\Gamma(\rho\pi)/\Gamma_{\text{total}}$			Γ_8/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		^{1,2} AUBERT,B	04N	BABR	$10.6 e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \gamma$
2.184 ± 0.005 ± 0.201	220k	^{2,3} BAI	04H	BES	$e^+ e^- \rightarrow J/\psi \rightarrow \pi^+ \pi^- \pi^0$
2.091 ± 0.021 ± 0.116		^{2,4} 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	$e^+ e^-$

- ¹ From the ratio of $\Gamma(e^+e^-) B(\pi^+\pi^-\pi^0)$ and $\Gamma(e^+e^-) B(\mu^+\mu^-)$ (AUBERT 04).
- ² Not independent of their $B(\pi^+\pi^-\pi^0)$.
- ³ From $J/\psi \rightarrow \pi^+\pi^-\pi^0$ events directly.
- ⁴ 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 $B(J/\psi \rightarrow \mu^+\mu^-) = 5.88 \pm 0.10\%$.



$\Gamma(\rho\pi)/\Gamma(\pi^+\pi^-\pi^0)$		Γ_8/Γ_{135}		
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.142±0.011±0.026	20K	¹ LEES	17C	BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1.331±0.033	20K	² LEES	17C	BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

- ¹ From a Dalitz plot analysis in an isobar model.
- ² From a Dalitz plot analysis in a Veneziano model.

$\Gamma(\rho^0\pi^0)/\Gamma(\rho\pi)$		Γ_9/Γ_8		
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^-	

$\Gamma(\rho(1450)\pi \rightarrow \pi^+\pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{12}/Γ_{135}

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
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10.9 ± 1.7 ± 2.7 20K ¹ LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

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

0.80 ± 0.27 20K ² LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

¹ From a Dalitz plot analysis in an isobar model.

² From a Dalitz plot analysis in a Veneziano model.

$\Gamma(\rho(1450)^\pm\pi^\mp \rightarrow K_S^0 K^\pm\pi^\mp)/\Gamma(K_S^0 K^\pm\pi^\mp)$ Γ_{13}/Γ_{151}

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
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6.3 ± 0.8 ± 0.6 4K ¹ LEES 17C BABR $J/\psi \rightarrow K_S^0 K^\pm\pi^\mp$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(\rho(1450)^0\pi^0 \rightarrow K^+K^-\pi^0)/\Gamma(K^+K^-\pi^0)$ Γ_{14}/Γ_{150}

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
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9.3 ± 2.0 ± 0.6 2K ¹ LEES 17C BABR $J/\psi \rightarrow K^+K^-\pi^0$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(\rho(1450)\eta'(958) \rightarrow \pi^+\pi^-\eta'(958))/\Gamma_{\text{total}}$ Γ_{15}/Γ

VALUE (units 10 ⁻⁶)	EVTS	DOCUMENT ID	TECN	COMMENT
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3.28 ± 0.55 ± 0.44 119 ¹ ABLIKIM 17AK BES3 $J/\psi \rightarrow \pi^+\pi^-\eta'$

¹ From a partial wave analysis of the decay $J/\psi \rightarrow \pi^+\pi^-\eta'$.

$\Gamma(\rho(1700)\pi \rightarrow \pi^+\pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{17}/Γ_{135}

VALUE (units 10 ⁻³)	EVTS	DOCUMENT ID	TECN	COMMENT
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8 ± 2 ± 5 20K ¹ LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

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

22 ± 6 20K ² LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

¹ From a Dalitz plot analysis in an isobar model.

² From a Dalitz plot analysis in a Veneziano model.

$\Gamma(\rho(2150)\pi \rightarrow \pi^+\pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{19}/Γ_{135}

VALUE (units 10 ⁻⁴)	EVTS	DOCUMENT ID	TECN	COMMENT
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4 ± 1 ± 20 20K ¹ LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

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

600 ± 250 20K ² LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

¹ From a Dalitz plot analysis in an isobar model.

² From a Dalitz plot analysis in a Veneziano model.

$\Gamma(\rho_3(1690)\pi \rightarrow \pi^+\pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{20}/Γ_{135}

VALUE (units 10 ⁻³)	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

4.0 ± 0.8 20K ¹ LEES 17C BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

¹ From a Dalitz plot analysis in a Veneziano model.

$\Gamma(a_2(1320)\rho)/\Gamma_{\text{total}}$ Γ_{21}/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	$J/\psi \rightarrow \rho^0 \rho^\pm \pi^\mp$
8.4±4.5	36	VANNUCCI 77	MRK1	$e^+ e^- \rightarrow 2(\pi^+ \pi^-) \pi^0$

$\Gamma(\omega \pi^+ \pi^+ \pi^- \pi^-)/\Gamma_{\text{total}}$ Γ_{22}/Γ

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

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
7.2±1.0 OUR AVERAGE				
7.0±1.6	18058	AUGUSTIN 89	DM2	$J/\psi \rightarrow 2(\pi^+ \pi^-) \pi^0$
7.8±1.6	215	BURMESTER 77D	PLUT	$e^+ e^-$
6.8±1.9	348	VANNUCCI 77	MRK1	$e^+ e^- \rightarrow 2(\pi^+ \pi^-) \pi^0$

$\Gamma(\omega f_2(1270))/\Gamma_{\text{total}}$ Γ_{25}/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	$e^+ e^- \rightarrow 2(\pi^+ \pi^-) \pi^0$

$\Gamma(K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{26}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<5	90	VANNUCCI 77	MRK1	$e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^-$

$\Gamma(K^*(892)^\pm K^*(892)^\mp)/\Gamma_{\text{total}}$ Γ_{27}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.00±0.19^{+0.11}_{-0.32}	323	ABLIKIM 10E	BES2	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$

$\Gamma(K^*(892)^\pm K^*(700)^\mp)/\Gamma_{\text{total}}$ Γ_{28}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.09±0.18^{+0.94}_{-0.54}	655	ABLIKIM 10E	BES2	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$

$\Gamma(\eta K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{32}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.15±0.13±0.22	209	ABLIKIM 10C	BES2	$J/\psi \rightarrow \eta K^+ \pi^- K^- \pi^+$

$\Gamma(K^*(1410) \bar{K} + c.c \rightarrow K^\pm K^\mp \pi^0)/\Gamma(K^+ K^- \pi^0)$ Γ_{38}/Γ_{150}

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
2.3±1.1±0.7	2K	¹ LEES 17C	BABR	$J/\psi \rightarrow K^+ K^- \pi^0$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(K^*(1410)\bar{K} + \text{c.c.} \rightarrow K_S^0 K^\pm \pi^\mp) / \Gamma(K_S^0 K^\pm \pi^\mp)$ $\Gamma_{39} / \Gamma_{151}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
$1.5 \pm 0.5 \pm 0.9$	4K	¹ LEES	17C BABR	$J/\psi \rightarrow K_S^0 K^\pm \pi^\mp$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(K_2^*(1430)\bar{K} + \text{c.c.} \rightarrow K^\pm K^\mp \pi^0) / \Gamma(K^+ K^- \pi^0)$ $\Gamma_{41} / \Gamma_{150}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
$3.5 \pm 1.3 \pm 0.9$	2K	¹ LEES	17C BABR	$J/\psi \rightarrow K^+ K^- \pi^0$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(K_2^*(1430)\bar{K} + \text{c.c.} \rightarrow K_S^0 K^\pm \pi^\mp) / \Gamma(K_S^0 K^\pm \pi^\mp)$ $\Gamma_{42} / \Gamma_{151}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
$7.1 \pm 1.3 \pm 1.2$	4K	¹ LEES	17C BABR	$J/\psi \rightarrow K_S^0 K^\pm \pi^\mp$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(K^*(892)^0 \bar{K}_2^*(1430)^0 + \text{c.c.}) / \Gamma_{\text{total}}$ Γ_{43} / Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
6.7 ± 2.6	40	VANNUCCI 77	MRK1	$e^+ e^- \rightarrow \pi^+ \pi^- K^+ K^-$

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

$\Gamma(\omega K^*(892)\bar{K} + \text{c.c.}) / \Gamma_{\text{total}}$ Γ_{47} / Γ

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

$\Gamma(\bar{K} K^*(892) + \text{c.c.} \rightarrow K_S^0 K^\pm \pi^\mp) / \Gamma(K_S^0 K^\pm \pi^\mp)$ $\Gamma_{49} / \Gamma_{151}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
$90.5 \pm 0.9 \pm 3.8$	4K	¹ LEES	17C BABR	$J/\psi \rightarrow K_S^0 K^\pm \pi^\mp$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(K^+ K^*(892)^- + \text{c.c.}) / \Gamma_{\text{total}}$ Γ_{50} / Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
5.0 ± 0.4 OUR AVERAGE				
$4.57 \pm 0.17 \pm 0.70$	2285	JOUSSET	90 DM2	$J/\psi \rightarrow \text{hadrons}$
$5.26 \pm 0.13 \pm 0.53$		COFFMAN	88 MRK3	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp, K^+ K^- \pi^0$

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

2.6 ± 0.6	24	FRANKLIN	83 MRK2	$J/\psi \rightarrow K^+ K^- \pi^0$
3.2 ± 0.6	48	VANNUCCI	77 MRK1	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp$
4.1 ± 1.2	39	BRAUNSCH...	76 DASP	$J/\psi \rightarrow K^\pm X$

$\Gamma(K^+ K^*(892)^- + \text{c.c.} \rightarrow K^+ K^- \pi^0) / \Gamma(K^+ K^- \pi^0)$ $\Gamma_{51} / \Gamma_{150}$

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
$92.4 \pm 1.5 \pm 3.4$	2K	¹ LEES	17C BABR	$J/\psi \rightarrow K^+ K^- \pi^0$

¹ From a Dalitz plot analysis in an isobar model.

$\Gamma(K^0 \bar{K}^*(892)^0 + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{53}/Γ

<u>VALUE (units 10^{-3})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
4.2 \pm 0.4 OUR AVERAGE				
3.96 \pm 0.15 \pm 0.60	1192	JOUSSET	90 DM2	$J/\psi \rightarrow \text{hadrons}$
4.33 \pm 0.12 \pm 0.45		COFFMAN	88 MRK3	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.7 \pm 0.6	45	VANNUCCI	77 MRK1	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp$

 $\Gamma(K_1(1400)^\pm K^\mp)/\Gamma_{\text{total}}$ Γ_{55}/Γ

<u>VALUE (units 10^{-3})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
3.8 \pm 0.8 \pm 1.2	¹ BAI	99C BES	$e^+ e^-$
¹ Assuming $B(K_1(1400) \rightarrow K^* \pi) = 0.94 \pm 0.06$			

 $\Gamma(\bar{K}^*(892)^0 K^+ \pi^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{56}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
• • • We do not use the following data for averages, fits, limits, etc. • • •			
seen	¹ ABLIKIM	06C BES2	$J/\psi \rightarrow \bar{K}^*(892)^0 K^+ \pi^-$
¹ A $K_0^*(700)$ is observed by ABLIKIM 06C in the $K^+ \pi^-$ mass spectrum of the $\bar{K}^*(892)^0 K^+ \pi^-$ final state against the $\bar{K}^*(892)$. A corresponding branching fraction of the $J/\psi(1S)$ is not presented.			

 $\Gamma(\omega \pi^0 \pi^0)/\Gamma_{\text{total}}$ Γ_{59}/Γ

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

 $\Gamma(b_1(1235)^\pm \pi^\mp)/\Gamma_{\text{total}}$ Γ_{61}/Γ

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

 $\Gamma(\omega K^\pm K_S^0 \pi^\mp)/\Gamma_{\text{total}}$ Γ_{62}/Γ

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

 $\Gamma(b_1(1235)^0 \pi^0)/\Gamma_{\text{total}}$ Γ_{63}/Γ

<u>VALUE (units 10^{-4})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
23 \pm 3 \pm 5	229	AUGUSTIN	89 DM2	$e^+ e^-$

 $\Gamma(\eta K^\pm K_S^0 \pi^\mp)/\Gamma_{\text{total}}$ Γ_{64}/Γ

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

$\Gamma(\eta' K^* \bar{K}^0 + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{34}/Γ

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
$1.66 \pm 0.03 \pm 0.21$	¹ ABLIKIM	18AB BES3	$J/\psi \rightarrow \eta' K^* \bar{K}$
¹ From $\eta' K_S^0 K^\pm \pi^\mp$.			

$\Gamma(\eta' K^{*\pm} K^\mp)/\Gamma_{\text{total}}$ Γ_{33}/Γ

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
1.48 ± 0.13 OUR AVERAGE			
$1.50 \pm 0.02 \pm 0.19$	¹ ABLIKIM	18AB BES3	$J/\psi \rightarrow \eta' K^* \bar{K}$
$1.47 \pm 0.03 \pm 0.17$	² ABLIKIM	18AB BES3	$J/\psi \rightarrow \eta' K^* \bar{K}$
¹ From $\eta' K^+ K^- \pi^0$.			
² From $\eta' K_S^0 K^\pm \pi^\mp$.			

$\Gamma(\eta' h_1(1415) \rightarrow \eta' K^{*\pm} K^\mp)/\Gamma_{\text{total}}$ Γ_{36}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$1.51 \pm 0.09 \pm 0.21$	1.0k	¹ ABLIKIM	18AB BES3	$J/\psi \rightarrow \eta' h_1 \rightarrow \eta' K^* \bar{K}$
¹ From $\eta' K^+ K^- \pi^0$.				

$\Gamma(\eta' h_1(1415) \rightarrow \eta' K^* \bar{K} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{35}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$2.16 \pm 0.12 \pm 0.29$	1.1k	¹ ABLIKIM	18AB BES3	$J/\psi \rightarrow \eta' h_1 \rightarrow \eta' K^* \bar{K}$
¹ From $\eta' K_S^0 K^\pm \pi^\mp$.				

$\Gamma(\phi K^*(892) \bar{K} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{65}/Γ

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

$\Gamma(\omega K \bar{K})/\Gamma_{\text{total}}$ Γ_{66}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
19 ± 4 OUR AVERAGE				
$19.8 \pm 2.1 \pm 3.9$		¹ FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$
16 ± 10	22	FELDMAN	77 MRK1	$e^+ e^-$
¹ Addition of $\omega K^+ K^-$ and $\omega K^0 \bar{K}^0$ branching ratios.				

$\Gamma(\omega f_0(1710) \rightarrow \omega K \bar{K})/\Gamma_{\text{total}}$ Γ_{67}/Γ

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
$4.8 \pm 1.1 \pm 0.3$	^{1,2} FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$
¹ Includes unknown branching fraction $f_0(1710) \rightarrow K \bar{K}$.			
² Addition of $f_0(1710) \rightarrow K^+ K^-$ and $f_0(1710) \rightarrow K^0 \bar{K}^0$ branching ratios.			

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

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
16.0 ± 1.0 ± 3.0	FALVARD	88	DM2 $J/\psi \rightarrow \text{hadrons}$

$\Gamma(\Delta(1232)^{++} \bar{p} \pi^-)/\Gamma_{\text{total}}$ Γ_{69}/Γ

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

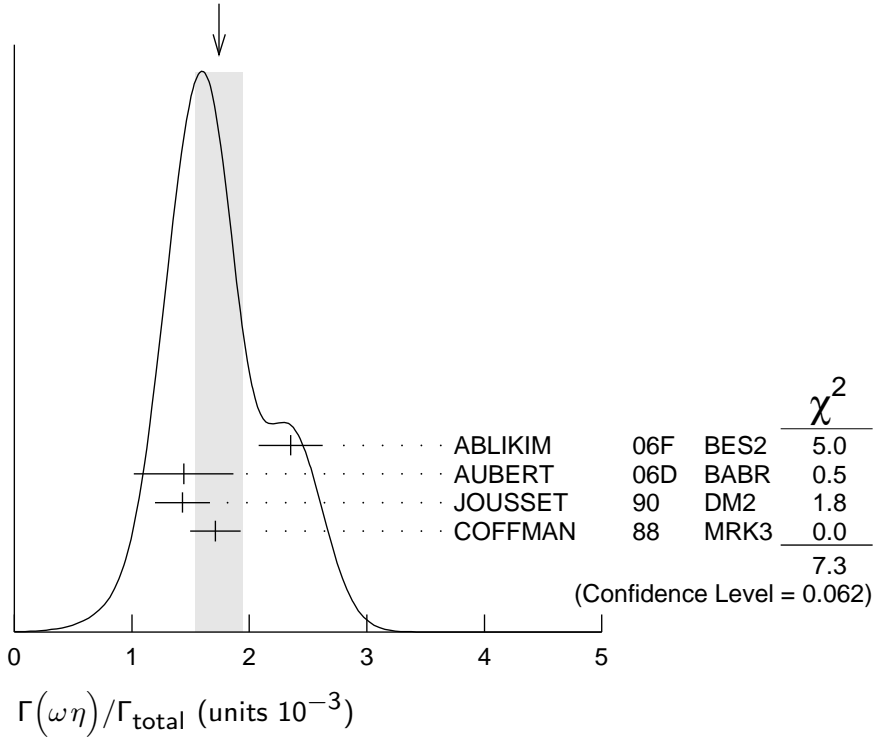
$\Gamma(\omega \eta)/\Gamma_{\text{total}}$ Γ_{70}/Γ

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	¹ ABLIKIM	06F	BES2 $J/\psi \rightarrow \omega \eta$
1.44 ± 0.40 ± 0.14	13	² AUBERT	06D	BABR $10.6 e^+ e^- \rightarrow \omega \eta \gamma$
1.43 ± 0.10 ± 0.21	378	JOUSSET	90	DM2 $J/\psi \rightarrow \text{hadrons}$
1.71 ± 0.08 ± 0.20		COFFMAN	88	MRK3 $e^+ e^- \rightarrow 3\pi \eta$

¹ Using $B(\eta \rightarrow 2\gamma) = (39.43 \pm 0.26)\%$, $B(\eta \rightarrow \pi^+ \pi^- \pi^0) = 22.6 \pm 0.4\%$, $B(\eta \rightarrow \pi^+ \pi^- \gamma) = 4.68 \pm 0.11\%$, and $B(\omega \rightarrow \pi^+ \pi^- \pi^0) = (89.1 \pm 0.7)\%$.

² Using $\Gamma(J/\psi \rightarrow e^+ e^-) = 5.52 \pm 0.14 \pm 0.04$ keV.

WEIGHTED AVERAGE
1.74 ± 0.20 (Error scaled by 1.6)



$\Gamma(\phi K \bar{K})/\Gamma_{\text{total}}$

Γ_{71}/Γ

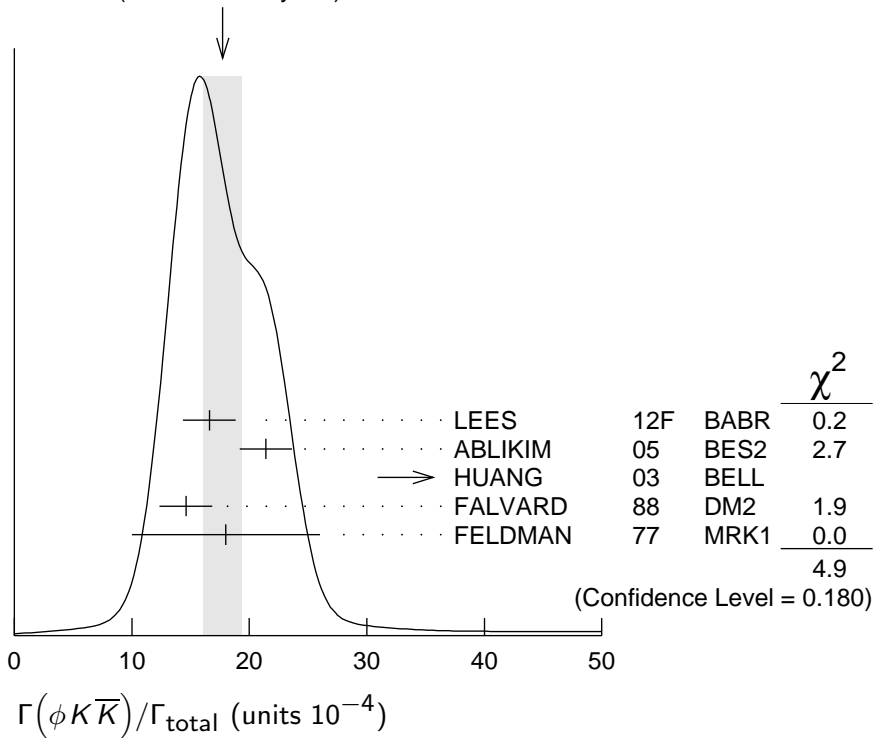
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
17.7 ± 1.6 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.		
16.6 ± 1.9 ± 1.2	163 ± 19	LEES	12F BABR	10.6 $e^+e^- \rightarrow 2(K^+K^-)\gamma$
21.4 ± 0.4 ± 2.2		ABLIKIM	05 BES2	$J/\psi \rightarrow \phi\pi^+\pi^-$
48 $^{+20}_{-16}$ ± 6	9.0 $^{+3.7}_{-3.0}$	1,2 HUANG	03 BELL	$B^+ \rightarrow (\phi K^+K^-) K^+$
14.6 ± 0.8 ± 2.1		3 FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$
18 ± 8	14	FELDMAN	77 MRK1	e^+e^-

¹ We have multiplied K^+K^- measurement by 2 to obtain $K\bar{K}$.

² Using $B(B^+ \rightarrow J/\psi K^+) = (1.01 \pm 0.05) \times 10^{-3}$.

³ Addition of ϕK^+K^- and $\phi K^0\bar{K}^0$ branching ratios.

WEIGHTED AVERAGE
17.7 ± 1.6 (Error scaled by 1.3)



$\Gamma(\phi f_0(1710) \rightarrow \phi K \bar{K})/\Gamma_{\text{total}}$

Γ_{73}/Γ

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
3.6 ± 0.2 ± 0.6	1,2 FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$

¹ Including interference with $f_2'(1525)$.

² Includes unknown branching fraction $f_0(1710) \rightarrow K\bar{K}$.

$\Gamma(\phi f_2(1270))/\Gamma_{\text{total}}$

Γ_{75}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
< 0.45	90	FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$
< 0.37	90	VANNUCCI	77 MRK1	$e^+e^- \rightarrow \pi^+\pi^-K^+K^-$

$\Gamma(\Delta(1232)^{++}\bar{\Delta}(1232)^{--})/\Gamma_{\text{total}}$ Γ_{76}/Γ

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

$\Gamma(\Sigma(1385)^-\bar{\Sigma}(1385)^+(\text{or c.c.}))/\Gamma_{\text{total}}$ Γ_{77}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.16 ±0.05 OUR AVERAGE				
1.096±0.012±0.071	43K	ABLIKIM 16L	BES3	$J/\psi \rightarrow \Sigma(1385)^-\bar{\Sigma}(1385)^+$
1.258±0.014±0.078	53k	ABLIKIM 16L	BES3	$J/\psi \rightarrow \Sigma(1385)^+\bar{\Sigma}(1385)^-$
1.23 ±0.07 ±0.30	0.8k	ABLIKIM 12P	BES2	$J/\psi \rightarrow \Sigma(1385)^-\bar{\Sigma}(1385)^+$
1.50 ±0.08 ±0.38	1k	ABLIKIM 12P	BES2	$J/\psi \rightarrow \Sigma(1385)^+\bar{\Sigma}(1385)^-$
1.00 ±0.04 ±0.21	0.6k	HENRARD 87	DM2	$e^+e^- \rightarrow \Sigma^{*-}$
1.19 ±0.04 ±0.25	0.7k	HENRARD 87	DM2	$e^+e^- \rightarrow \Sigma^{*+}$
0.86 ±0.18 ±0.22	56	EATON 84	MRK2	$e^+e^- \rightarrow \Sigma^{*-}$
1.03 ±0.24 ±0.25	68	EATON 84	MRK2	$e^+e^- \rightarrow \Sigma^{*+}$

$\Gamma(\Sigma(1385)^0\bar{\Sigma}(1385)^0)/\Gamma_{\text{total}}$ Γ_{78}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.071±0.009±0.082	103k	ABLIKIM 17E	BES3	$e^+e^- \rightarrow J/\psi \rightarrow$ hadrons

$\Gamma(\phi f'_2(1525))/\Gamma_{\text{total}}$ Γ_{80}/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		^{1,2} FALVARD 88	DM2	$J/\psi \rightarrow$ hadrons
4.8±1.8	46	¹ GIDAL 81	MRK2	$J/\psi \rightarrow K^+K^-K^+K^-$

¹ Re-evaluated using $B(f'_2(1525) \rightarrow K\bar{K}) = 0.713$.

² Including interference with $f_0(1710)$.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.94±0.15 OUR AVERAGE				Error includes scale factor of 1.7.
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^-

$\Gamma(\phi K^\pm K_S^0 \pi^\mp)/\Gamma_{\text{total}}$ Γ_{83}/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

$\Gamma(\omega f_1(1420))/\Gamma_{\text{total}}$ Γ_{84}/Γ

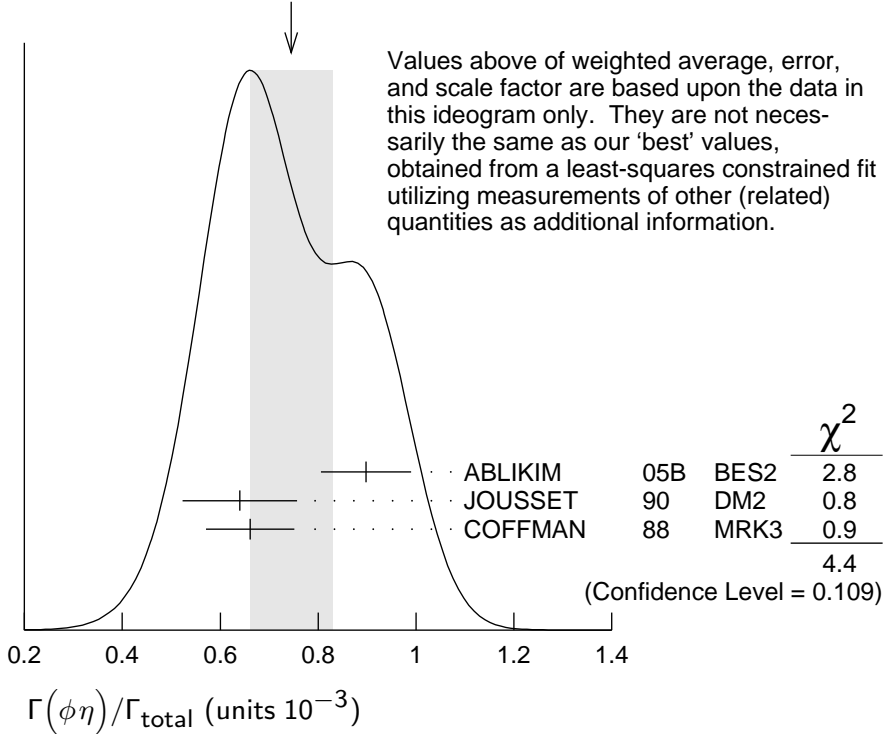
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
6.8^{+1.9}_{-1.6}±1.7	111 ⁺³¹ ₋₂₆	BECKER 87	MRK3	$e^+e^- \rightarrow$ hadrons

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

Γ_{85}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.74 ± 0.08	OUR AVERAGE	Error includes scale factor of 1.5. See the ideogram below.		
0.898 ± 0.024 ± 0.089		ABLIKIM	05B	BES2 $e^+e^- \rightarrow J/\psi \rightarrow \text{hadr}$
0.64 ± 0.04 ± 0.11	346	JOUSSET	90	DM2 $J/\psi \rightarrow \text{hadrons}$
0.661 ± 0.045 ± 0.078		COFFMAN	88	MRK3 $e^+e^- \rightarrow K^+K^-\eta$

WEIGHTED AVERAGE
0.74 ± 0.08 (Error scaled by 1.5)



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

Γ_{86}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.17 ± 0.04	OUR AVERAGE			
1.165 ± 0.004 ± 0.043	135K	ABLIKIM	17E	BES3 $e^+e^- \rightarrow J/\psi \rightarrow \text{hadrons}$
1.20 ± 0.12 ± 0.21	206	ABLIKIM	080	BES2 $e^+e^- \rightarrow J/\psi$

$\Gamma(\Xi(1530)^-\Xi^+)/\Gamma_{\text{total}}$

Γ_{87}/Γ

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

$\Gamma(pK^-\bar{\Sigma}(1385)^0)/\Gamma_{\text{total}}$

Γ_{88}/Γ

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

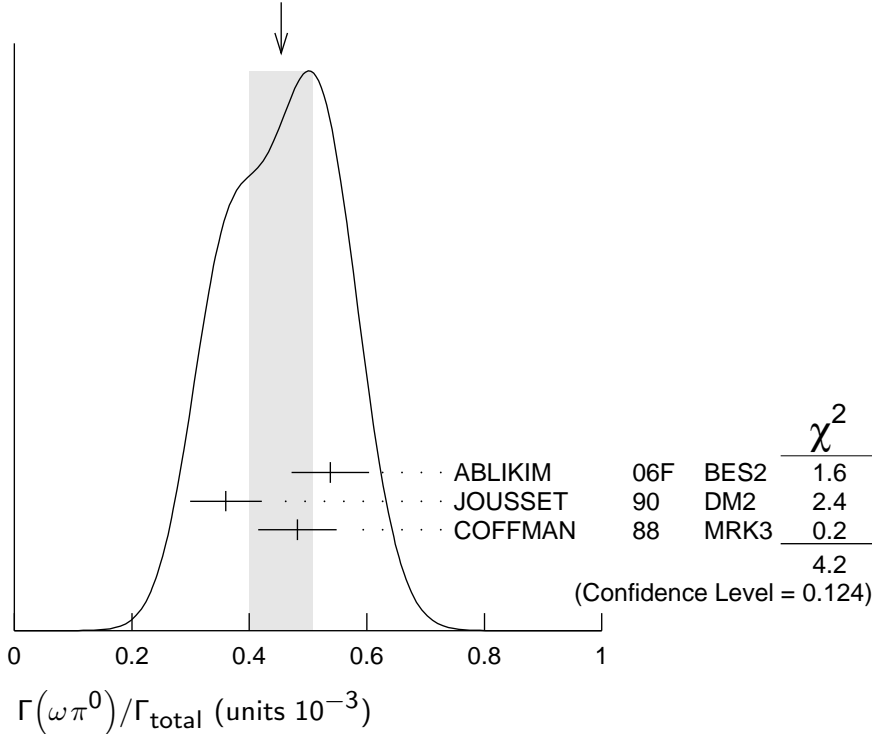
$\Gamma(\omega\pi^0)/\Gamma_{\text{total}}$

Γ_{89}/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	¹ ABLIKIM	06F	BES2 $J/\psi \rightarrow \omega\pi^0$
0.360 ± 0.028 ± 0.054	222	JOUSSET	90	DM2 $J/\psi \rightarrow \text{hadrons}$
0.482 ± 0.019 ± 0.064		COFFMAN	88	MRK3 $e^+e^- \rightarrow \pi^0\pi^+\pi^-\pi^0$

¹ Using $B(\omega \rightarrow \pi^+\pi^-\pi^0) = (89.1 \pm 0.7)\%$.

WEIGHTED AVERAGE
0.45±0.05 (Error scaled by 1.4)



$\Gamma(\omega\pi^0 \rightarrow \pi^+\pi^-\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$

Γ_{90}/Γ_{135}

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
8 ± 3 ± 2	20K	¹ LEES	17C	BABR $J/\psi \rightarrow \pi^+\pi^-\pi^0$

¹ From a Dalitz plot analysis in an isobar model and significance 4.9σ .

$\Gamma(\phi\eta'(958))/\Gamma_{\text{total}}$

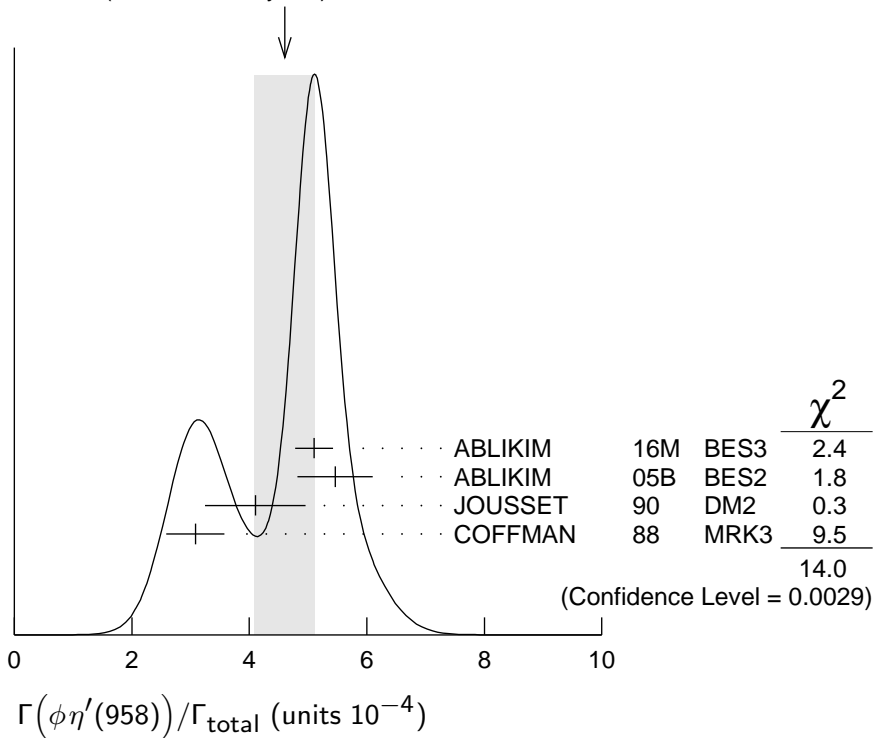
Γ_{91}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
4.6 ± 0.5 OUR AVERAGE			Error includes scale factor of 2.2. See the ideogram below.		
5.10 ± 0.03 ± 0.32		31k	ABLIKIM	16M	BES3 $e^+e^- \rightarrow J/\psi \rightarrow \text{hadrons}$
5.46 ± 0.31 ± 0.56			ABLIKIM	05B	BES2 $e^+e^- \rightarrow J/\psi \rightarrow \text{hadrons}$
4.1 ± 0.3 ± 0.8		167	JOUSSET	90	DM2 $J/\psi \rightarrow \text{hadrons}$
3.08 ± 0.34 ± 0.36			COFFMAN	88	MRK3 $e^+e^- \rightarrow K^+K^-\eta'$

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

< 13	90	VANNUCCI	77	MRK1	e^+e^-
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WEIGHTED AVERAGE
 4.6 ± 0.5 (Error scaled by 2.2)



$\Gamma(\phi f_0(980)) / \Gamma_{\text{total}}$

Γ_{92} / Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
3.2 ± 0.9 OUR AVERAGE				Error includes scale factor of 1.9.
$4.6 \pm 0.4 \pm 0.8$		¹ FALVARD 88	DM2	$J/\psi \rightarrow \text{hadrons}$
2.6 ± 0.6	50	¹ GIDAL 81	MRK2	$J/\psi \rightarrow K^+ K^- K^+ K^-$

¹ Assuming $B(f_0(980) \rightarrow \pi\pi) = 0.78$.

$\Gamma(\phi \pi^0 f_0(980) \rightarrow \phi \pi^0 \pi^+ \pi^-) / \Gamma_{\text{total}}$

Γ_{95} / Γ

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
$4.50 \pm 0.80 \pm 0.61$	355	ABLIKIM 15P	BES3	$J/\psi \rightarrow K^+ K^- 3\pi$

$\Gamma(\phi \pi^0 f_0(980) \rightarrow \phi \pi^0 \rho^0 \pi^0) / \Gamma_{\text{total}}$

Γ_{96} / Γ

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
$1.67 \pm 0.50 \pm 0.24$	70	ABLIKIM 15P	BES3	$J/\psi \rightarrow K^+ K^- 3\pi$

$\Gamma(\eta \phi f_0(980) \rightarrow \eta \phi \pi^+ \pi^-) / \Gamma_{\text{total}}$

Γ_{97} / Γ

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

$\Gamma(\phi a_0(980)^0 \rightarrow \phi \eta \pi^0) / \Gamma_{\text{total}}$ Γ_{98} / Γ

VALUE (units 10^{-6})		DOCUMENT ID	TECN	COMMENT
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4.37 ± 1.35		¹ ABLIKIM	18D	BES3 $J/\psi \rightarrow \phi \eta \pi^0$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

5.0 ± 2.7 ± 2.5		² ABLIKIM	11D	BES3 $J/\psi \rightarrow \phi \eta \pi^0$
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¹ Assuming constructive interference between $a_0(980) - f_0(980)$ mixing and electromagnetic decay. Destructive interference gives a value of $(4.93 \pm 1.77) \times 10^{-6}$ for this branching fraction.

² Assuming $a_0(980) - f_0(980)$ mixing and isospin breaking via γ^* and $K^* K$ loops.

 $\Gamma(\Xi(1530)^0 \Xi^0) / \Gamma_{\text{total}}$ Γ_{99} / Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
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0.32 ± 0.12 ± 0.07	24 ± 9	HENRARD	87	DM2 $e^+ e^-$
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 $\Gamma(\Sigma(1385)^- \bar{\Sigma}^+ (\text{or c.c.})) / \Gamma_{\text{total}}$ Γ_{100} / Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
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0.31 ± 0.05 OUR AVERAGE

0.30 ± 0.03 ± 0.07	74 ± 8	HENRARD	87	DM2 $e^+ e^- \rightarrow \Sigma^{*-}$
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0.34 ± 0.04 ± 0.07	77 ± 9	HENRARD	87	DM2 $e^+ e^- \rightarrow \Sigma^{*+}$
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0.29 ± 0.11 ± 0.10	26	EATON	84	MRK2 $e^+ e^- \rightarrow \Sigma^{*-}$
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0.31 ± 0.11 ± 0.11	28	EATON	84	MRK2 $e^+ e^- \rightarrow \Sigma^{*+}$
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 $\Gamma(\phi f_1(1285)) / \Gamma_{\text{total}}$ Γ_{101} / Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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2.6 ± 0.5 OUR AVERAGE

3.4 ± 1.8 ± 1.5	1.1k	¹ ABLIKIM	15H	BES3 $e^+ e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$
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3.2 ± 0.6 ± 0.4		JOUSSET	90	DM2 $J/\psi \rightarrow \phi 2(\pi^+ \pi^-)$
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2.1 ± 0.5 ± 0.4	25	² JOUSSET	90	DM2 $J/\psi \rightarrow \phi \eta \pi^+ \pi^-$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.6 ± 0.2 ± 0.1	16	BECKER	87	MRK3 $J/\psi \rightarrow \phi K \bar{K} \pi$
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¹ ABLIKIM 15H reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_1(1285)) / \Gamma_{\text{total}}] \times [B(f_1(1285) \rightarrow \eta \pi^+ \pi^-)] = (1.20 \pm 0.6 \pm 0.14) \times 10^{-4}$ which we divide by our best value $B(f_1(1285) \rightarrow \eta \pi^+ \pi^-) = (35 \pm 15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² We attribute to the $f_1(1285)$ the signal observed in the $\pi^+ \pi^- \eta$ invariant mass distribution at 1297 MeV.

 $\Gamma(\phi f_1(1285) \rightarrow \phi \pi^0 f_0(980) \rightarrow \phi \pi^0 \pi^+ \pi^-) / \Gamma_{\text{total}}$ Γ_{102} / Γ

VALUE (units 10^{-7})	EVTS	DOCUMENT ID	TECN	COMMENT
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9.36 ± 2.31 ± 1.54	78	ABLIKIM	15P	BES3 $J/\psi \rightarrow K^+ K^- 3\pi$
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 $\Gamma(\phi f_1(1285) \rightarrow \phi \pi^0 f_0(980) \rightarrow \phi \pi^0 \pi^0 \pi^0) / \Gamma_{\text{total}}$ Γ_{103} / Γ

VALUE (units 10^{-7})	EVTS	DOCUMENT ID	TECN	COMMENT
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2.08 ± 1.63 ± 1.47	9	ABLIKIM	15P	BES3 $J/\psi \rightarrow K^+ K^- 3\pi$
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$\Gamma(\eta\rho)/\Gamma_{\text{total}}$ Γ_{105}/Γ

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

$\Gamma(\omega\eta'(958))/\Gamma_{\text{total}}$ Γ_{106}/Γ

<u>VALUE (units 10^{-4})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1.89±0.18 OUR AVERAGE				
2.08±0.30±0.14	137	¹ ABLIKIM	17AK BES3	$J/\psi \rightarrow \pi^+\pi^-\eta'$
2.26±0.43	218	² ABLIKIM	06F BES2	$J/\psi \rightarrow \omega\eta'$
1.8 ^{+1.0} / _{-0.8} ±0.3	6	JOUSSET	90 DM2	$J/\psi \rightarrow \text{hadrons}$
1.66±0.17±0.19		COFFMAN	88 MRK3	$e^+e^- \rightarrow 3\pi\eta'$

¹ From a partial wave analysis of the decay $J/\psi \rightarrow \pi^+\pi^-\eta'$.

² 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 $B(\omega \rightarrow \pi^+\pi^-\pi^0) = (89.1 \pm 0.7)\%$.

$\Gamma(\omega f_0(980))/\Gamma_{\text{total}}$ Γ_{107}/Γ

<u>VALUE (units 10^{-4})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1.41±0.27±0.47	¹ AUGUSTIN	89 DM2	$J/\psi \rightarrow 2(\pi^+\pi^-)\pi^0$

¹ Assuming $B(f_0(980) \rightarrow \pi\pi) = 0.78$.

$\Gamma(\rho\eta'(958))/\Gamma_{\text{total}}$ Γ_{108}/Γ

<u>VALUE (units 10^{-5})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
8.1 ±0.8 OUR AVERAGE				Error includes scale factor of 1.6.
7.90±0.19±0.49	3476	¹ ABLIKIM	17AK BES3	$J/\psi \rightarrow \pi^+\pi^-\eta'$
8.3 ±3.0 ±1.2	19	JOUSSET	90 DM2	$J/\psi \rightarrow \text{hadrons}$
11.4 ±1.4 ±1.6		COFFMAN	88 MRK3	$J/\psi \rightarrow \pi^+\pi^-\eta'$

¹ From a partial wave analysis of the decay $J/\psi \rightarrow \pi^+\pi^-\eta'$.

$\Gamma(a_2(1320)^\pm\pi^\mp)/\Gamma_{\text{total}}$ Γ_{109}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<43 × 10⁻⁴	90	BRAUNSCH...	76 DASP	e^+e^-

$\Gamma(K\bar{K}_2^*(1430)+\text{c.c.})/\Gamma_{\text{total}}$ Γ_{110}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<40 × 10⁻⁴	90	VANNUCCI	77 MRK1	$e^+e^- \rightarrow K^0\bar{K}_2^{*0}$

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

<66 × 10 ⁻⁴	90	BRAUNSCH...	76 DASP	$e^+e^- \rightarrow K^\pm\bar{K}_2^{*\mp}$
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$\Gamma(K_1(1270)^\pm K^\mp)/\Gamma_{\text{total}}$ Γ_{111}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<3.0 × 10⁻³	90	¹ BAI	99C BES	e^+e^-

¹ Assuming $B(K_1(1270) \rightarrow K\rho) = 0.42 \pm 0.06$

$\Gamma(K_1(1270)K_S^0 \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{112}/Γ

VALUE (units 10^{-7})	CL%	DOCUMENT ID	TECN	COMMENT
$8.54^{+1.07+2.35}_{-1.20-2.13}$		ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$

$\Gamma(K_2^*(1430)^0 \bar{K}_2^*(1430)^0)/\Gamma_{\text{total}}$ Γ_{114}/Γ

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

$\Gamma(\phi\pi^0)/\Gamma_{\text{total}}$ Γ_{115}/Γ

The two different fit values of ABLIKIM 15K below have the same statistical significance of 6.4σ and cannot be distinguished at this moment.

VALUE (units 10^{-6})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$2.94 \pm 0.16 \pm 0.16$		0.8k	¹ ABLIKIM	15K BES3	$e^+e^- \rightarrow J/\psi \rightarrow K^+ K^- \gamma \gamma$
$0.124 \pm 0.033 \pm 0.030$		35 ± 9	² ABLIKIM	15K BES3	$e^+e^- \rightarrow J/\psi \rightarrow K^+ K^- \gamma \gamma$

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

<6.4	90	³ ABLIKIM	05B BES2	$e^+e^- \rightarrow J/\psi \rightarrow \phi \gamma \gamma$
<6.8	90	COFFMAN	88 MRK3	$e^+e^- \rightarrow K^+ K^- \pi^0$

¹ Corresponding to one of the two fit solutions with $\delta = (-95.9 \pm 1.5)^\circ$ for the phase angle between the resonant $J/\psi \rightarrow \phi\pi^0$ and non-phi $J/\psi \rightarrow K^+ K^- \pi^0$ contributions.

² Corresponding to one of the two fit solutions with $\delta = (-152.1 \pm 7.7)^\circ$ for the phase angle between the resonant $J/\psi \rightarrow \phi\pi^0$ and non-phi $J/\psi \rightarrow K^+ K^- \pi^0$ contributions.

³ Superseded by ABLIKIM 15K.

$\Gamma(\phi\eta(1405) \rightarrow \phi\eta\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{116}/Γ

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$2.01 \pm 0.58 \pm 0.82$		172	¹ ABLIKIM	15H BES3	$e^+e^- \rightarrow J/\psi \rightarrow \phi\eta\pi^+\pi^-$

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

<17	90	² FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$
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¹ With 3.6σ significance.

² Includes unknown branching fraction $\eta(1405) \rightarrow \eta\pi\pi$.

$\Gamma(\omega f_2'(1525))/\Gamma_{\text{total}}$ Γ_{117}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.2 \times 10^{-4}$	90	¹ VANNUCCI	77 MRK1	$e^+e^- \rightarrow \pi^+ \pi^- \pi^0 K^+ K^-$

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

$<2.8 \times 10^{-4}$	90	¹ FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$
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¹ Re-evaluated assuming $B(f_2'(1525) \rightarrow K\bar{K}) = 0.713$.

$\Gamma(\omega X(1835) \rightarrow \omega p\bar{p})/\Gamma_{\text{total}}$ Γ_{118}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<3.9 \times 10^{-6}$	95	ABLIKIM	13P BES3	$J/\psi \rightarrow \gamma\pi^0 p\bar{p}$

$\Gamma(\phi X(1835) \rightarrow \phi p \bar{p})/\Gamma_{\text{total}}$ Γ_{119}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.1 \times 10^{-7}$	90	¹ ABLIKIM	16K BES3	$J/\psi \rightarrow p \bar{p} K_S^0 K_L^0,$ $p \bar{p} K^+ K^-$

¹ Upper limit applies to any $p \bar{p}$ mass enhancement near threshold.

$\Gamma(\phi X(1835) \rightarrow \phi \eta \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{120}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.8 \times 10^{-4}$	90	ABLIKIM	15H BES3	$e^+ e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

$\Gamma(\phi X(1870) \rightarrow \phi \eta \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{121}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<6.13 \times 10^{-5}$	90	ABLIKIM	15H BES3	$e^+ e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

$\Gamma(\eta \phi(2170) \rightarrow \eta \phi f_0(980) \rightarrow \eta \phi \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{122}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$1.20 \pm 0.14 \pm 0.37$	471	ABLIKIM	15H BES3	$e^+ e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

$\Gamma(\eta \phi(2170) \rightarrow \eta K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{123}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.52 \times 10^{-4}$	90	ABLIKIM	10C BES2	$J/\psi \rightarrow \eta K^+ \pi^- K^- \pi^+$

$\Gamma(\Sigma(1385)^0 \bar{\Lambda} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{124}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<0.82 \times 10^{-5}$	90	ABLIKIM	13F BES3	$J/\psi \rightarrow p \bar{p} \pi^+ \pi^- \gamma \gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<0.2 \times 10^{-3}$	90	HENRARD	87 DM2	$e^+ e^-$

$\Gamma(\Delta(1232)^+ \bar{p})/\Gamma_{\text{total}}$ Γ_{125}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<0.1 \times 10^{-3}$	90	HENRARD	87 DM2	$e^+ e^-$

$\Gamma(\Lambda(1520) \bar{\Lambda} + \text{c.c.} \rightarrow \gamma \Lambda \bar{\Lambda})/\Gamma_{\text{total}}$ Γ_{126}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<4.1 \times 10^{-6}$	90	ABLIKIM	12B BES3	$J/\psi \rightarrow \Lambda \bar{\Lambda} \gamma$

$\Gamma(\bar{\Lambda}(1520) \Lambda + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{127}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.80 \times 10^{-3}$	90	LU	19 BELL	$B^+ \rightarrow \bar{p} \Lambda K^+ K^+$

$\Gamma(\Theta(1540) \bar{\Theta}(1540) \rightarrow K_S^0 p K^- \bar{n} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{128}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.1 \times 10^{-5}$	90	BAI	04G BES2	$e^+ e^-$

$\Gamma(\Theta(1540) K^- \bar{n} \rightarrow K_S^0 p K^- \bar{n})/\Gamma_{\text{total}}$ Γ_{129}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.1 \times 10^{-5}$	90	BAI	04G BES2	$e^+ e^-$

$\Gamma(\Theta(1540)K_S^0\bar{p} \rightarrow K_S^0\bar{p}K^+n)/\Gamma_{\text{total}}$ Γ_{130}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.6 \times 10^{-5}$	90	BAI	04G	BES2 e^+e^-

$\Gamma(\bar{\Theta}(1540)K^+n \rightarrow K_S^0\bar{p}K^+n)/\Gamma_{\text{total}}$ Γ_{131}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<5.6 \times 10^{-5}$	90	BAI	04G	BES2 e^+e^-

$\Gamma(\bar{\Theta}(1540)K_S^0p \rightarrow K_S^0pK^-\bar{n})/\Gamma_{\text{total}}$ Γ_{132}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.1 \times 10^{-5}$	90	BAI	04G	BES2 e^+e^-

————— STABLE HADRONS —————

$\Gamma(2(\pi^+\pi^-\pi^0))/\Gamma_{\text{total}}$ Γ_{133}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
3.37±0.26 OUR AVERAGE				
3.25±0.49	46055	AUGUSTIN 89	DM2	$J/\psi \rightarrow 2(\pi^+\pi^-\pi^0)$
3.17±0.42	147	FRANKLIN 83	MRK2	$e^+e^- \rightarrow \text{hadrons}$
3.64±0.52	1500	BURMESTER 77D	PLUT	e^+e^-
4 ±1	675	JEAN-MARIE 76	MRK1	e^+e^-

$\Gamma(3(\pi^+\pi^-\pi^0))/\Gamma_{\text{total}}$ Γ_{134}/Γ

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

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{135}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
21.0 ±0.8 OUR AVERAGE				Error includes scale factor of 1.6. See the ideogram below.
21.37±0.04 ^{+0.64} _{-0.62}	1.8M	^{1,2} ABLIKIM 12H	BES3	$e^+e^- \rightarrow J/\psi$
23.0 ±2.0 ±0.4	256	³ AUBERT 07AU	BABR	10.6 $e^+e^- \rightarrow J/\psi\pi^+\pi^-\gamma$
21.84±0.05±2.01	220k	^{1,4} BAI 04H	BES	e^+e^-
20.91±0.21±1.16		^{4,5} BAI 04H	BES	e^+e^-
15 ±2	168	FRANKLIN 83	MRK2	e^+e^-

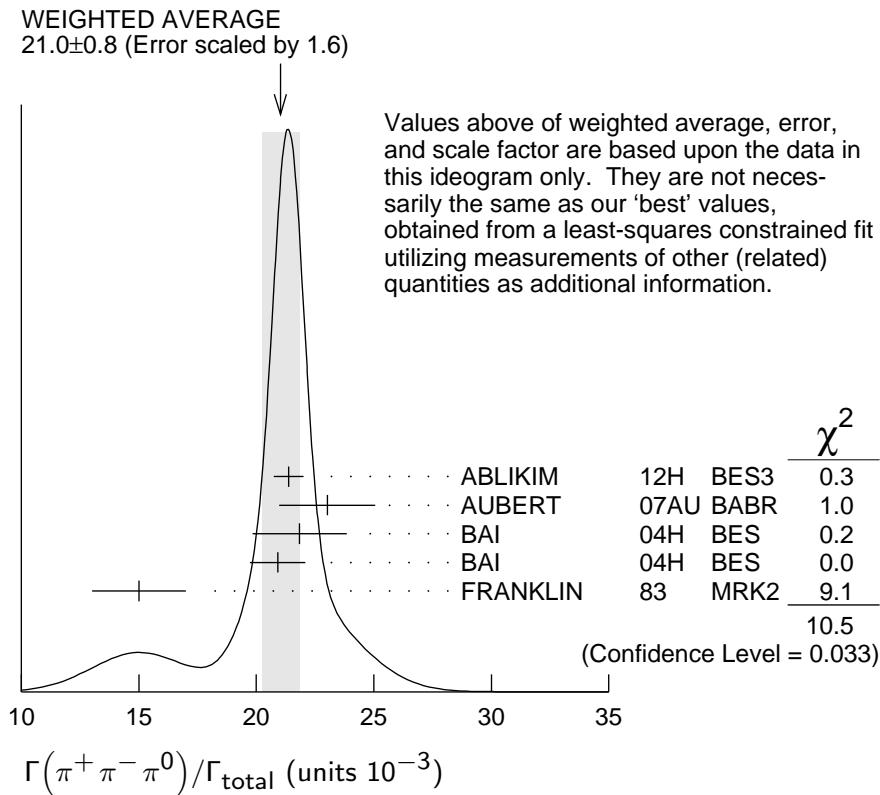
¹ From $J/\psi \rightarrow \pi^+\pi^-\pi^0$ events directly.

² The quoted systematic error includes a contribution of 1.23% (added in quadrature) from the uncertainty on the number of J/ψ events.

³ AUBERT 07AU reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^-\pi^0)/\Gamma_{\text{total}}] \times [\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) \times \Gamma(\psi(2S) \rightarrow e^+e^-)/\Gamma_{\text{total}}] = (18.6 \pm 1.2 \pm 1.1) \times 10^{-3}$ keV which we divide by our best value $\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) \times \Gamma(\psi(2S) \rightarrow e^+e^-)/\Gamma_{\text{total}} = 0.808 \pm 0.013$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

⁴ Mostly $\rho\pi$, see also $\rho\pi$ subsection.

⁵ 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 $B(J/\psi \rightarrow \mu^+\mu^-) = 5.88 \pm 0.10\%$.



$\Gamma(\pi^+ \pi^- \pi^0 K^+ K^-) / \Gamma_{\text{total}}$ **Γ_{139} / Γ**

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
1.2±0.3	309	VANNUCCI 77	MRK1	$e^+ e^-$

$\Gamma(4(\pi^+ \pi^-) \pi^0) / \Gamma_{\text{total}}$ **Γ_{140} / Γ**

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

$\Gamma(\pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}}$ **Γ_{141} / Γ**

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
7.2±2.3	205	VANNUCCI 77	MRK1	$e^+ e^-$

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

$\Gamma(K \bar{K} \pi) / \Gamma_{\text{total}}$ **Γ_{149} / 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	$e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp$

$\Gamma(K^+ K^- \pi^0) / \Gamma(\pi^+ \pi^- \pi^0)$ **$\Gamma_{150} / \Gamma_{135}$**

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
12.0±0.3±0.9	23K	LEES	17C	BABR $J/\psi \rightarrow h^+ h^- \pi^0$

$\Gamma(K_S^0 K^\pm \pi^\mp)/\Gamma(\pi^+ \pi^- \pi^0)$					$\Gamma_{151}/\Gamma_{135}$
VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT	
26.5 ± 0.5 ± 2.1	24K	LEES	17C	BABR	$J/\psi \rightarrow h^0 h^+ h^-$

$\Gamma(2(\pi^+ \pi^-))/\Gamma_{\text{total}}$					Γ_{156}/Γ
VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT	
3.57 ± 0.30 OUR AVERAGE					
3.53 ± 0.12 ± 0.29	1107	¹ ABLIKIM	05H	BES2	$e^+ e^- \rightarrow \psi(2S) \rightarrow J/\psi \pi^+ \pi^-, J/\psi \rightarrow 2(\pi^+ \pi^-)$
4.0 ± 1.0	76	JEAN-MARIE	76	MRK1	$e^+ e^-$

¹ Computed using $B(J/\psi \rightarrow \mu^+ \mu^-) = 0.0588 \pm 0.0010$.

$\Gamma(3(\pi^+ \pi^-))/\Gamma_{\text{total}}$					Γ_{157}/Γ
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
40 ± 20	32	JEAN-MARIE	76	MRK1	$e^+ e^-$

$\Gamma(2(\pi^+ \pi^-)\eta)/\Gamma_{\text{total}}$					Γ_{159}/Γ
VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT	
2.26 ± 0.08 ± 0.27	4.8k	ABLIKIM	05C	BES2	$e^+ e^- \rightarrow 2(\pi^+ \pi^-)\eta$

$\Gamma(3(\pi^+ \pi^-)\eta)/\Gamma_{\text{total}}$					Γ_{160}/Γ
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT	
7.24 ± 0.96 ± 1.11	616	ABLIKIM	05C	BES2	$e^+ e^- \rightarrow 3(\pi^+ \pi^-)\eta$

$\Gamma(\rho\bar{\rho})/\Gamma_{\text{total}}$					Γ_{163}/Γ
VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT	
2.121 ± 0.029 OUR AVERAGE					
2.112 ± 0.004 ± 0.031	314k	ABLIKIM	12C	BES3	$e^+ e^-$
2.19 ± 0.16 ± 0.06	317	¹ WU	06	BELL	$B^+ \rightarrow \rho\bar{\rho}K^+$
2.26 ± 0.01 ± 0.14	63316	BAI	04E	BES2	$e^+ e^- \rightarrow J/\psi$
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	² 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 $e^+ e^-$

¹ WU 06 reports $[\Gamma(J/\psi(1S) \rightarrow \rho\bar{\rho})/\Gamma_{\text{total}}] \times [B(B^+ \rightarrow J/\psi(1S)K^+)] = (2.21 \pm 0.13 \pm 0.10) \times 10^{-6}$ which we divide by our best value $B(B^+ \rightarrow J/\psi(1S)K^+) = (1.010 \pm 0.028) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Assuming angular distribution $(1+\cos^2\theta)$.

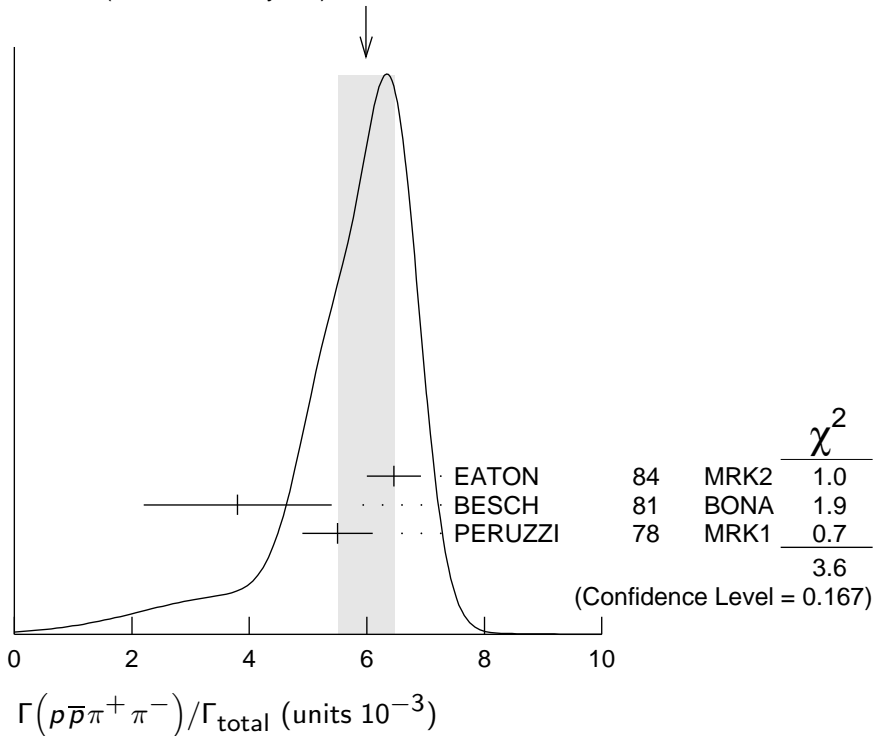
$\Gamma(\rho\bar{p}\pi^0)/\Gamma_{\text{total}}$ Γ_{164}/Γ

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^-

$\Gamma(\rho\bar{p}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{165}/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^-

WEIGHTED AVERAGE
6.0±0.5 (Error scaled by 1.3)



$\Gamma(\rho\bar{p}\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{166}/Γ

Including $\rho\bar{p}\pi^+\pi^-\gamma$ 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^-

$\Gamma(p\bar{p}\eta)/\Gamma_{\text{total}}$ Γ_{167}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
2.00±0.12 OUR AVERAGE				
1.91±0.02±0.17	13k	¹ 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^-

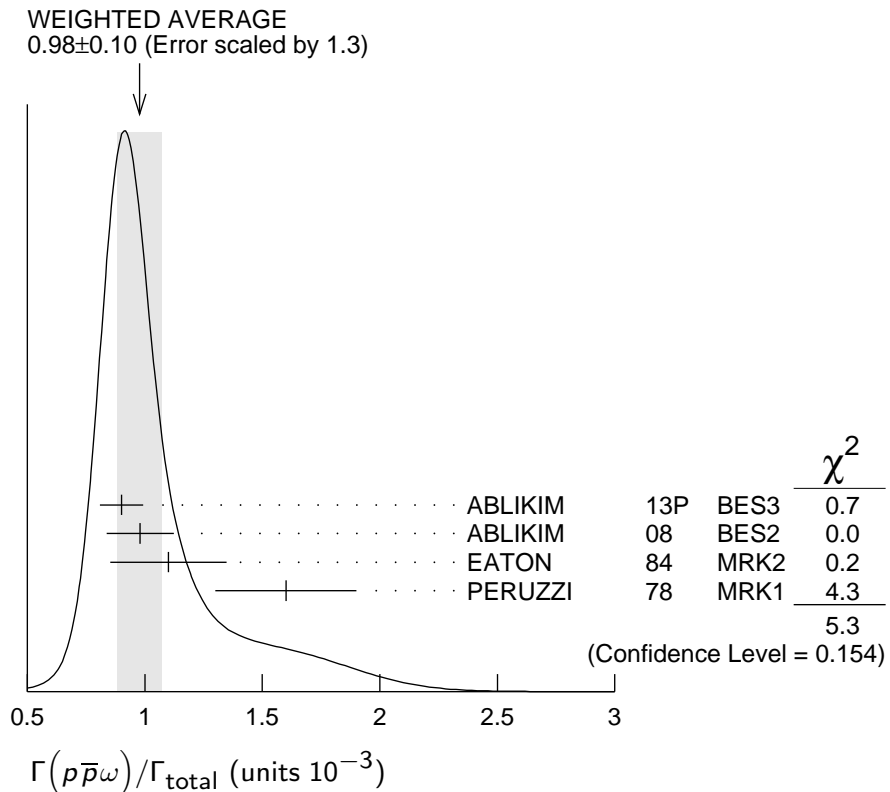
¹ From the combination of $p\bar{p}\eta \rightarrow p\bar{p}\gamma\gamma$ and $p\bar{p}\eta \rightarrow p\bar{p}\pi^+\pi^-\pi^0$ channels.

$\Gamma(p\bar{p}\rho)/\Gamma_{\text{total}}$ Γ_{168}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.31 × 10⁻³	90	EATON	84	MRK2 $e^+e^- \rightarrow \text{hadrons}\gamma$

$\Gamma(p\bar{p}\omega)/\Gamma_{\text{total}}$ Γ_{169}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.98±0.10 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.				
0.90±0.02±0.09	2670	ABLIKIM	13P	BES3 e^+e^-
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^-



$\Gamma(p\bar{p}\eta'(958))/\Gamma_{\text{total}}$ Γ_{170}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.129±0.014 OUR AVERAGE Error includes scale factor of 2.0.				
0.126±0.002±0.007	16K	¹ ABLIKIM	19N BES3	e^+e^-
0.200±0.023±0.028	265 ± 31	² 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^-

¹ From the combination of $p\bar{p}\eta' \rightarrow p\bar{p}\pi^+\pi^-\eta$ and $p\bar{p}\eta' \rightarrow p\bar{p}\pi^+\pi^-\gamma$ channels.

² From the combination of $p\bar{p}\eta' \rightarrow p\bar{p}\pi^+\pi^-\eta$ and $p\bar{p}\eta' \rightarrow p\bar{p}\gamma\rho^0$ channels.

$\Gamma(p\bar{p}a_0(980) \rightarrow p\bar{p}\pi^0\eta)/\Gamma_{\text{total}}$ Γ_{171}/Γ

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
6.8±1.2±1.3	ABLIKIM	14N BES3	$e^+e^- \rightarrow J/\psi$

$\Gamma(p\bar{p}\phi)/\Gamma_{\text{total}}$ Γ_{172}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
0.519±0.033 OUR AVERAGE				
0.523±0.006±0.033	14K	ABLIKIM	16K BES3	$J/\psi \rightarrow p\bar{p}K_S^0 K_L^0,$ $p\bar{p}K^+ K^-$
0.45 ±0.13 ±0.07		FALVARD	88 DM2	$J/\psi \rightarrow \text{hadrons}$

$\Gamma(n\bar{n})/\Gamma_{\text{total}}$ Γ_{173}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
2.09±0.16 OUR AVERAGE				
2.07±0.01±0.17	36k	ABLIKIM	12C BES3	e^+e^-
2.31±0.49	79	BALDINI	98 FENI	e^+e^-
1.8 ±0.9		BESCH	78 BONA	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.90±0.55	40	ANTONELLI	93 SPEC	e^+e^-

$\Gamma(n\bar{n}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{174}/Γ

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

$\Gamma(\Sigma^+\bar{\Sigma}^-)/\Gamma_{\text{total}}$ Γ_{175}/Γ

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

$\Gamma(\Sigma^0\bar{\Sigma}^0)/\Gamma_{\text{total}}$ Γ_{176}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.172±0.032 OUR AVERAGE Error includes scale factor of 1.4.				
1.164±0.004±0.023	111k	ABLIKIM	17L BES3	$J/\psi \rightarrow \Sigma^0\bar{\Sigma}^0$
1.33 ±0.04 ±0.11	1.7k	ABLIKIM	06 BES2	$J/\psi \rightarrow \Sigma^0\bar{\Sigma}^0$
1.06 ±0.04 ±0.23	884	PALLIN	87 DM2	$e^+e^- \rightarrow \Sigma^0\bar{\Sigma}^0$
1.58 ±0.16 ±0.25	90	EATON	84 MRK2	$e^+e^- \rightarrow \Sigma^0\bar{\Sigma}^0$
1.3 ±0.4	52	PERUZZI	78 MRK1	$e^+e^- \rightarrow \Sigma^0\bar{\Sigma}^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.4 ±2.6	3	BESCH	81 BONA	$e^+e^- \rightarrow \Sigma^+\bar{\Sigma}^-$

$\Gamma(2(\pi^+\pi^-)K^+K^-)/\Gamma_{\text{total}}$ Γ_{177}/Γ

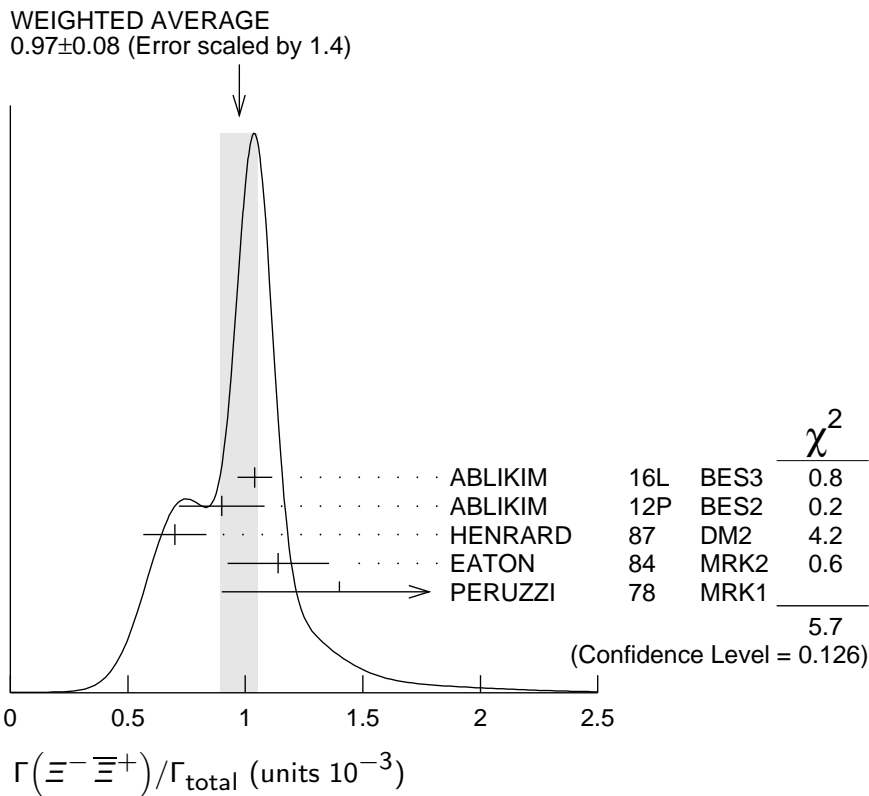
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
31±13	30	VANNUCCI 77	MRK1	e^+e^-

$\Gamma(\rho\bar{n}\pi^-)/\Gamma_{\text{total}}$ Γ_{178}/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	$J/\psi \rightarrow \rho\pi^-\bar{n}$
2.47±0.02±0.24	55k	ABLIKIM 06K	BES2	$J/\psi \rightarrow \bar{\rho}\pi^+n$
2.02±0.07±0.16	1288	EATON 84	MRK2	$e^+e^- \rightarrow \rho\pi^-$
1.93±0.07±0.16	1191	EATON 84	MRK2	$e^+e^- \rightarrow \bar{\rho}\pi^+$
1.7 ±0.7	32	BESCH 81	BONA	$e^+e^- \rightarrow \rho\pi^-$
1.6 ±1.2	5	BESCH 81	BONA	$e^+e^- \rightarrow \bar{\rho}\pi^+$
2.16±0.29	194	PERUZZI 78	MRK1	$e^+e^- \rightarrow \rho\pi^-$
2.04±0.27	204	PERUZZI 78	MRK1	$e^+e^- \rightarrow \bar{\rho}\pi^+$

$\Gamma(\Xi^-\Xi^+)/\Gamma_{\text{total}}$ Γ_{182}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.97 ±0.08 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.				
1.040±0.006±0.074	43k	ABLIKIM 16L	BES3	$J/\psi \rightarrow \Xi^-\Xi^+$
0.90 ±0.03 ±0.18	961	ABLIKIM 12P	BES2	$J/\psi \rightarrow \Xi^-\Xi^+$
0.70 ±0.06 ±0.12	132	HENRARD 87	DM2	$e^+e^- \rightarrow \Xi^-\Xi^+$
1.14 ±0.08 ±0.20	194	EATON 84	MRK2	$e^+e^- \rightarrow \Xi^-\Xi^+$
1.4 ±0.5	51	PERUZZI 78	MRK1	$e^+e^- \rightarrow \Xi^-\Xi^+$



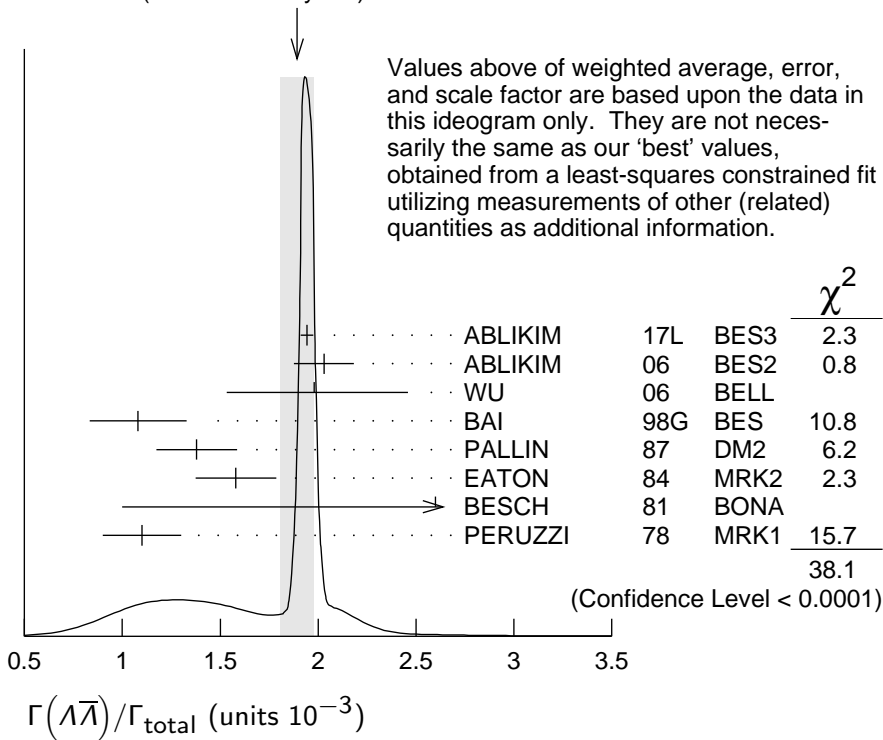
$\Gamma(\Lambda\bar{\Lambda})/\Gamma_{\text{total}}$

Γ_{183}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.89 ± 0.09 OUR AVERAGE		Error includes scale factor of 2.8.		See the ideogram below.
1.943 ± 0.003 ± 0.033	441k	ABLIKIM	17L BES3	e^+e^-
2.03 ± 0.03 ± 0.15	8887	ABLIKIM	06 BES2	$J/\psi \rightarrow \Lambda\bar{\Lambda}$
2.0 $^{+0.5}_{-0.4}$ ± 0.1	46	¹ WU	06 BELL	$B^+ \rightarrow \Lambda\bar{\Lambda}K^+$
1.08 ± 0.06 ± 0.24	631	BAI	98G BES	e^+e^-
1.38 ± 0.05 ± 0.20	1847	PALLIN	87 DM2	e^+e^-
1.58 ± 0.08 ± 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^-

¹WU 06 reports $[\Gamma(J/\psi(1S) \rightarrow \Lambda\bar{\Lambda})/\Gamma_{\text{total}}] \times [B(B^+ \rightarrow J/\psi(1S)K^+)] = (2.00^{+0.34}_{-0.29} \pm 0.34) \times 10^{-6}$ which we divide by our best value $B(B^+ \rightarrow J/\psi(1S)K^+) = (1.010 \pm 0.028) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

WEIGHTED AVERAGE
1.89±0.09 (Error scaled by 2.8)



$\Gamma(\Lambda\bar{\Sigma}^-\pi^+(\text{or c.c.}))/\Gamma_{\text{total}}$

Γ_{184}/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	¹ ABLIKIM	07H BES2	$e^+e^- \rightarrow \bar{\Lambda}\Sigma^+\pi^-$
0.747 ± 0.056 ± 0.076	254	¹ ABLIKIM	07H BES2	$e^+e^- \rightarrow \Lambda\bar{\Sigma}^-\pi^+$
0.90 ± 0.06 ± 0.16	225 ± 15	HENRARD	87 DM2	$e^+e^- \rightarrow \bar{\Lambda}\Sigma^+\pi^-$

1.11 ±0.06 ±0.20	342 ± 18	HENRARD	87	DM2	$e^+e^- \rightarrow \Lambda \bar{\Sigma}^- \pi^+$
1.53 ±0.17 ±0.38	135	EATON	84	MRK2	$e^+e^- \rightarrow \bar{\Lambda} \Sigma^+ \pi^-$
1.38 ±0.21 ±0.35	118	EATON	84	MRK2	$e^+e^- \rightarrow \Lambda \bar{\Sigma}^- \pi^+$

¹ Using $B(\Lambda \rightarrow \pi^- p) = 63.9\%$ and $B(\Sigma^+ \rightarrow \pi^0 p) = 51.6\%$.

$\Gamma(\rho K^- \bar{\Lambda} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{185}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
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0.87 ± 0.11 OUR AVERAGE

0.85 ^{+0.17} _{-0.15} ± 0.02	45	¹ LU	19	BELL	$B^+ \rightarrow \bar{p} \Lambda K^+ K^+$
0.89 ± 0.07 ± 0.14	307	EATON	84	MRK2	e^+e^-

¹ LU 19 reports $(8.32^{+1.63}_{-1.45} \pm 0.49) \times 10^{-4}$ from a measurement of $[\Gamma(J/\psi(1S) \rightarrow \rho K^- \bar{\Lambda} + \text{c.c.})/\Gamma_{\text{total}}] \times [B(B^+ \rightarrow J/\psi(1S) K^+)]$ assuming $B(B^+ \rightarrow J/\psi(1S) K^+) = (1.026 \pm 0.031) \times 10^{-3}$, which we rescale to our best value $B(B^+ \rightarrow J/\psi(1S) K^+) = (1.010 \pm 0.028) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(2(K^+ K^-))/\Gamma_{\text{total}}$ Γ_{186}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

1.4 ^{+0.5} _{-0.4} ± 0.2	11.0 ^{+4.3} _{-3.5}	¹ HUANG	03	BELL	$B^+ \rightarrow 2(K^+ K^-) K^+$
0.7 ± 0.3		VANNUCCI	77	MRK1	e^+e^-

¹ Using $B(B^+ \rightarrow J/\psi K^+) = (1.01 \pm 0.05) \times 10^{-3}$.

$\Gamma(\rho K^- \bar{\Sigma}^0)/\Gamma_{\text{total}}$ Γ_{187}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
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0.29 ± 0.06 ± 0.05	90	EATON	84	MRK2	e^+e^-
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$\Gamma(K^+ K^-)/\Gamma_{\text{total}}$ Γ_{188}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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2.86 ± 0.09 ± 0.19	1k	¹ METREVELI	12		$\psi(2S) \rightarrow \pi^+ \pi^- K^+ K^-$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

2.39 ± 0.24 ± 0.22	107	² BALTRUSAIT..85D	MRK3	e^+e^-	
2.2 ± 0.9	6	² BRANDELIK	79c	DASP	e^+e^-

¹ Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

² Interference with non-resonant $K^+ K^-$ production not taken into account.

$\Gamma(K_S^0 K_L^0)/\Gamma_{\text{total}}$ Γ_{189}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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1.95 ± 0.11 OUR AVERAGE Error includes scale factor of 2.4. See the ideogram below.

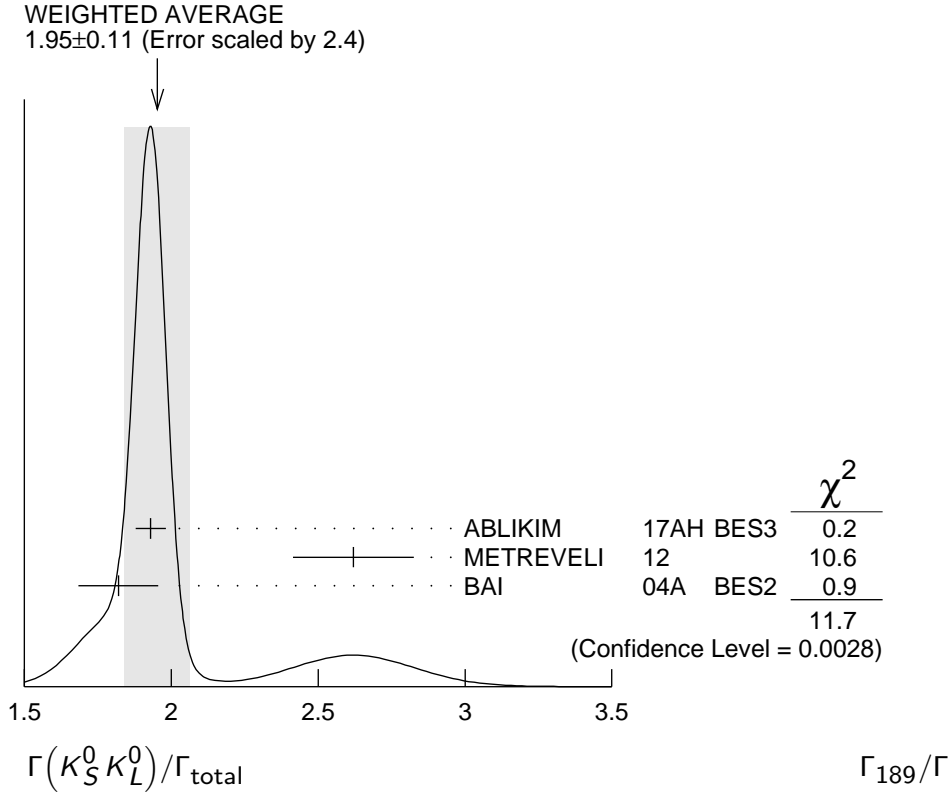
1.93 ± 0.01 ± 0.05	110K	ABLIKIM	17AH	BES3	$J/\psi \rightarrow K_S^0 K_L^0 \rightarrow \pi^+ \pi^- X$
2.62 ± 0.15 ± 0.14	0.3k	¹ METREVELI	12		$\psi(2S) \rightarrow \pi^+ \pi^- K_S^0 K_L^0$
1.82 ± 0.04 ± 0.13	2.1k	² BAI	04A	BES2	$J/\psi \rightarrow K_S^0 K_L^0 \rightarrow \pi^+ \pi^- X$

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

1.18±0.12±0.18 JOUSSET 90 DM2 $J/\psi \rightarrow$ hadrons
 1.01±0.16±0.09 74 BALTRUSAIT..85D MRK3 e^+e^-

¹ Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

² Using $B(K_S^0 \rightarrow \pi^+\pi^-) = 0.6868 \pm 0.0027$.



$\Gamma(\Lambda\bar{\Lambda}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{190}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
4.30±0.13±0.99	2.4k	ABLIKIM	12P BES2	J/ψ

$\Gamma(\Lambda\bar{\Lambda}\eta)/\Gamma_{\text{total}}$ Γ_{191}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
16.2±1.7 OUR AVERAGE				
15.7±0.80±1.54	454	¹ ABLIKIM	13F BES3	$J/\psi \rightarrow p\bar{p}\pi^+\pi^-\gamma\gamma$
26.2±6.0 ±4.4	44	² ABLIKIM	07H BES2	$e^+e^- \rightarrow \psi(2S)$

¹ Using $B(\Lambda \rightarrow \pi^- p) = 63.9\%$ and $B(\eta \rightarrow \gamma\gamma) = 39.31\%$.

² Using $B(\Lambda \rightarrow \pi^- p) = 63.9\%$ and $B(\eta \rightarrow \gamma\gamma) = 39.4\%$.

$\Gamma(\Lambda\bar{\Lambda}\pi^0)/\Gamma_{\text{total}}$ Γ_{192}/Γ

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
3.78±0.27±0.30		323	¹ ABLIKIM	13F BES3	$J/\psi \rightarrow p\bar{p}\pi^+\pi^-\gamma\gamma$

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

< 6.4	90	² ABLIKIM	07H	BES2	$e^+e^- \rightarrow \psi(2S)$
23 ± 7 ± 8		11 BAI		98G	BES e^+e^-
22 ± 5 ± 5		19 HENRARD	87	DM2	e^+e^-

¹ Using $B(\Lambda \rightarrow \pi^- p) = 63.9\%$ and $B(\pi^0 \rightarrow \gamma\gamma) = 98.8\%$.

² Using $B(\Lambda \rightarrow \pi^- p) = 63.9\%$.

$\Gamma(\bar{\Lambda}nK_S^0 + \text{c.c.})/\Gamma_{\text{total}}$ **Γ_{193}/Γ**

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
6.46 ± 0.20 ± 1.07	1058	¹ ABLIKIM	08C	BES2 $e^+e^- \rightarrow J/\psi$

¹ Using $B(\bar{\Lambda} \rightarrow \bar{p}\pi^+) = 63.9\%$ and $B(K_S^0 \rightarrow \pi^+\pi^-) = 69.2\%$.

$\Gamma(\pi^+\pi^-)/\Gamma_{\text{total}}$ **Γ_{194}/Γ**

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
1.47 ± 0.14 OUR AVERAGE				

1.47 ± 0.13 ± 0.13 140 ¹ METREVELI 12 $\psi(2S) \rightarrow 2(\pi^+\pi^-)$

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^-

¹ Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\Lambda\bar{\Sigma} + \text{c.c.})/\Gamma_{\text{total}}$ **Γ_{195}/Γ**

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
2.83 ± 0.23 OUR AVERAGE					

2.74 ± 0.24 ± 0.22 234 ± 21 ¹ ABLIKIM 12B BES3 $J/\psi \rightarrow \Lambda\bar{\Sigma}^0$

2.92 ± 0.22 ± 0.24 308 ± 24 ² ABLIKIM 12B BES3 $J/\psi \rightarrow \bar{\Lambda}\Sigma^0$

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

< 18		² HENRARD	87	DM2	$J/\psi \rightarrow \bar{\Lambda}\Sigma^0$
< 15	90	PERUZZI	78	MRK1	$e^+e^- \rightarrow \Lambda X$

¹ ABLIKIM 12B quotes $B(J/\psi \rightarrow \Lambda\bar{\Sigma}^0)$ which we multiply by 2.

² ABLIKIM 12B and HENRARD 87 quote results for $B(J/\psi \rightarrow \bar{\Lambda}\Sigma^0)$ which we multiply by 2.

$\Gamma(K_S^0 K_S^0)/\Gamma_{\text{total}}$ **Γ_{196}/Γ**

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
< 1.4 × 10⁻⁸	95	¹ ABLIKIM	17AH	BES3 $J/\psi \rightarrow K_S^0 K_S^0 \rightarrow \pi^+\pi^-\pi^+\pi^-$

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

< 1 × 10⁻⁶ 95 ¹ BAI 04D BES e^+e^-

< 5.2 × 10⁻⁶ 90 ¹ BALTRUSAIT..85C MRK3 e^+e^-

¹ Forbidden by CP.

————— RADIATIVE DECAYS —————

$\Gamma(3\gamma)/\Gamma_{\text{total}}$ Γ_{197}/Γ

<u>VALUE (units 10^{-6})</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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11.6 ± 2.2 OUR AVERAGE

11.3 ± 1.8 ± 2.0	113 ± 18		ABLIKIM	13I	BES3 $\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
12 ± 3 ± 2	24.2 ^{+7.2} _{-6.0}		ADAMS	08	CLEO $\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$

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

<55	90		PARTRIDGE	80	CBAL $e^+ e^-$
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$\Gamma(4\gamma)/\Gamma_{\text{total}}$ Γ_{198}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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$<9 \times 10^{-6}$	90	ADAMS	08	CLEO $\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
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$\Gamma(5\gamma)/\Gamma_{\text{total}}$ Γ_{199}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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$<15 \times 10^{-6}$	90	ADAMS	08	CLEO $\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
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$\Gamma(\gamma\pi^0\pi^0)/\Gamma_{\text{total}}$ Γ_{200}/Γ

<u>VALUE (units 10^{-3})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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1.15 ± 0.05	¹ ABLIKIM	15AE	BES3 $J/\psi \rightarrow \gamma\pi^0\pi^0$
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¹ The uncertainty is systematic as statistical is negligible.

$\Gamma(\gamma\eta\pi^0)/\Gamma_{\text{total}}$ Γ_{201}/Γ

<u>VALUE (units 10^{-6})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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21.4 ± 1.8 ± 2.5	596	ABLIKIM	16P	BES3 $J/\psi \rightarrow 5\gamma$
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$\Gamma(\gamma a_0(980)^0 \rightarrow \gamma\eta\pi^0)/\Gamma_{\text{total}}$ Γ_{202}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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$<2.5 \times 10^{-6}$	95	ABLIKIM	16P	BES3 $J/\psi \rightarrow 5\gamma$
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$\Gamma(\gamma a_2(1320)^0 \rightarrow \gamma\eta\pi^0)/\Gamma_{\text{total}}$ Γ_{203}/Γ

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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$<6.6 \times 10^{-6}$	95	ABLIKIM	16P	BES3 $J/\psi \rightarrow 5\gamma$
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$\Gamma(\gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{204}/Γ

<u>VALUE (units 10^{-4})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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8.1 ± 0.4	ABLIKIM	18AA	BES3 $J/\psi \rightarrow \gamma K_S^0 K_S^0$
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$\Gamma(\gamma\eta_c(1S))/\Gamma_{\text{total}}$ Γ_{205}/Γ

<u>VALUE (units 10^{-2})</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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1.7 ± 0.4 OUR AVERAGE Error includes scale factor of 1.5.

2.00 ± 0.31 ± 0.02		¹ MITCHELL	09	CLEO $e^+ e^- \rightarrow \gamma X$
1.27 ± 0.36		GAISER	86	CBAL $J/\psi \rightarrow \gamma X$

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

seen ANASHIN 14 KEDR $J/\psi \rightarrow \gamma \eta_c$
 0.79±0.20 273 ± 43 ² AUBERT 06E BABR $B^\pm \rightarrow K^\pm X_{c\bar{c}}$
 seen 16 BALTRUSAIT..84 MRK3 $J/\psi \rightarrow 2\phi\gamma$

¹ MITCHELL 09 reports $(1.98 \pm 0.09 \pm 0.30) \times 10^{-2}$ from a measurement of $[\Gamma(J/\psi(1S) \rightarrow \gamma \eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)]$ assuming $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (35.04 \pm 0.07 \pm 0.77) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.68 \pm 0.30) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² Calculated by the authors using an average of $B(J/\psi \rightarrow \gamma \eta_c) \times B(\eta_c \rightarrow K\bar{K}\pi)$ from BALTRUSAITIS 86, BISELLO 91, BAI 04 and $B(\eta_c \rightarrow K\bar{K}\pi) = (8.5 \pm 1.8)\%$ from AUBERT 06E.

$\Gamma(\gamma \eta_c(1S) \rightarrow 3\gamma)/\Gamma_{\text{total}}$ **Γ_{206}/Γ**
VALUE (units 10⁻⁶) EVTS DOCUMENT ID TECN COMMENT

3.8^{+1.3}_{-1.0} OUR AVERAGE Error includes scale factor of 1.1.

4.5±1.2±0.6 33 ± 9 ABLIKIM 13I BES3 $\psi(2S) \rightarrow \pi^+\pi^- J/\psi$
 1.2^{+2.7}_{-1.1}±0.3 1.2^{+2.8}_{-1.1} ADAMS 08 CLEO $\psi(2S) \rightarrow \pi^+\pi^- J/\psi$

$\Gamma(\gamma \pi^+\pi^- 2\pi^0)/\Gamma_{\text{total}}$ **Γ_{207}/Γ**
VALUE (units 10⁻³) DOCUMENT ID TECN COMMENT

8.3±0.2±3.1 ¹ BALTRUSAIT..86B MRK3 $J/\psi \rightarrow 4\pi\gamma$

¹ 4π mass less than 2.0 GeV.

$\Gamma(\gamma \eta \pi \pi)/\Gamma_{\text{total}}$ **Γ_{208}/Γ**
VALUE (units 10⁻³) DOCUMENT ID TECN COMMENT

6.1 ±1.0 OUR AVERAGE

5.85±0.3±1.05 ¹ EDWARDS 83B CBAL $J/\psi \rightarrow \eta \pi^+\pi^-$
 7.8 ±1.2±2.4 ¹ EDWARDS 83B CBAL $J/\psi \rightarrow \eta 2\pi^0$

¹ Broad enhancement at 1700 MeV.

$\Gamma(\gamma \eta_2(1870) \rightarrow \gamma \eta \pi^+\pi^-)/\Gamma_{\text{total}}$ **Γ_{209}/Γ**
VALUE (units 10⁻⁴) DOCUMENT ID TECN COMMENT

6.2±2.2±0.9 BAI 99 BES $J/\psi \rightarrow \gamma \eta \pi^+\pi^-$

$\Gamma(\gamma \eta(1405/1475) \rightarrow \gamma K\bar{K}\pi)/\Gamma_{\text{total}}$ **Γ_{210}/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 ^{1,2} BAI 00D BES $J/\psi \rightarrow \gamma K^\pm K_S^0 \pi^\mp$
 3.8 ±0.3 ±0.6 ³ AUGUSTIN 90 DM2 $J/\psi \rightarrow \gamma K\bar{K}\pi$
 4.0 ±0.7 ±1.0 ³ EDWARDS 82E CBAL $J/\psi \rightarrow K^+ K^- \pi^0 \gamma$
 4.3 ±1.7 ^{3,4} SCHARRE 80 MRK2 $e^+ e^-$

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

$1.78 \pm 0.21 \pm 0.33$	^{3,5,6} AUGUSTIN	92	DM2	$J/\psi \rightarrow \gamma K \bar{K} \pi$
$0.83 \pm 0.13 \pm 0.18$	^{3,7,8} AUGUSTIN	92	DM2	$J/\psi \rightarrow \gamma K \bar{K} \pi$
$0.66^{+0.17+0.24}_{-0.16-0.15}$	^{3,6,9} BAI	90C	MRK3	$J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$
$1.03^{+0.21+0.26}_{-0.18-0.19}$	^{3,8,10} BAI	90C	MRK3	$J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$

¹ Interference with the $J/\psi(1S)$ radiative transition to the broad $K \bar{K} \pi$ pseudoscalar state around 1800 is $(0.15 \pm 0.01 \pm 0.05) \times 10^{-3}$.

² Interference with $J/\psi \rightarrow \gamma f_1(1420)$ is $(-0.03 \pm 0.01 \pm 0.01) \times 10^{-3}$.

³ Includes unknown branching fraction $\eta(1405) \rightarrow K \bar{K} \pi$.

⁴ Corrected for spin-zero hypothesis for $\eta(1405)$.

⁵ From fit to the $a_0(980) \pi 0^-+$ partial wave.

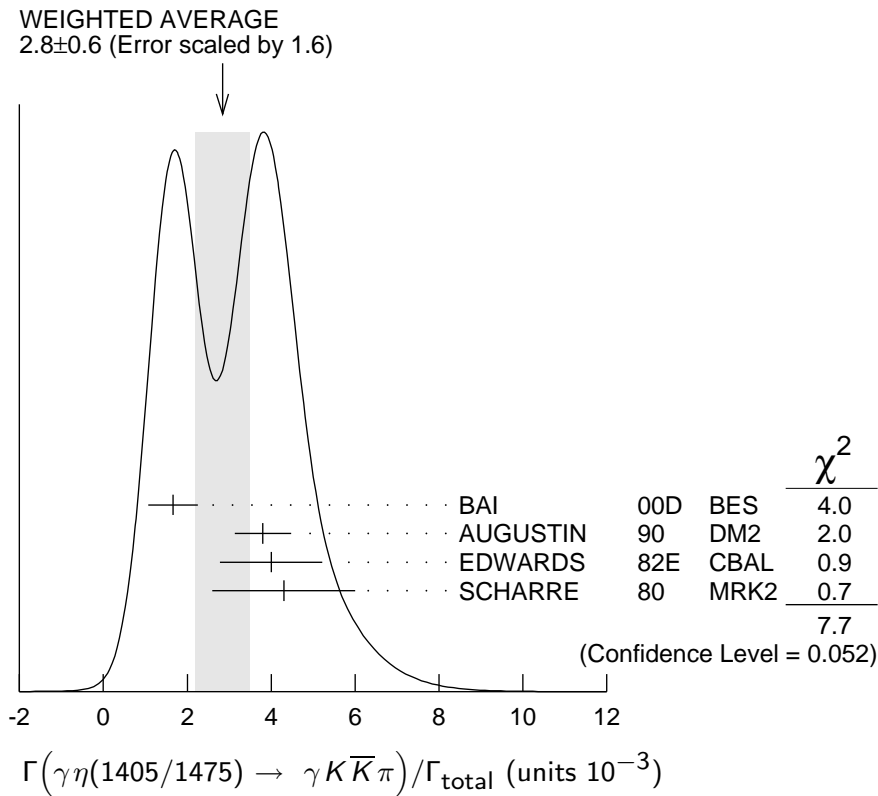
⁶ $a_0(980) \pi$ mode.

⁷ From fit to the $K^*(892) K 0^-+$ partial wave.

⁸ $K^* K$ mode.

⁹ From $a_0(980) \pi$ final state.

¹⁰ From $K^*(890) K$ final state.



$\Gamma(\gamma\eta(1405/1475) \rightarrow \gamma\gamma\rho^0) / \Gamma_{\text{total}}$ **Γ_{211} / Γ**

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
0.78 ± 0.20 OUR AVERAGE	Error includes scale factor of 1.8.		
$1.07 \pm 0.17 \pm 0.11$	¹ BAI	04J	BES2 $J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
$0.64 \pm 0.12 \pm 0.07$	¹ COFFMAN	90	MRK3 $J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$

¹ Includes unknown branching fraction $\eta(1405) \rightarrow \gamma\rho^0$.

$\Gamma(\gamma\eta(1405/1475) \rightarrow \gamma\eta\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{212}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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3.0 ± 0.5 OUR AVERAGE

2.6 ± 0.7 ± 0.4		BAI	99	BES $J/\psi \rightarrow \gamma\eta\pi^+\pi^-$
3.38 ± 0.33 ± 0.64		¹ BOLTON	92B	MRK3 $J/\psi \rightarrow \gamma\eta\pi^+\pi^-$

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

7.0 ± 0.6 ± 1.1	261	² AUGUSTIN	90	DM2 $J/\psi \rightarrow \gamma\eta\pi^+\pi^-$
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¹ Via $a_0(980)\pi$.

² Includes unknown branching fraction to $\eta\pi^+\pi^-$.

$\Gamma(\gamma\eta(1405/1475) \rightarrow \gamma\gamma\phi)/\Gamma_{\text{total}}$ Γ_{213}/Γ

VALUE (units 10^{-6})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
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<82	95		BAI	04J	BES2 $J/\psi \rightarrow \gamma\gamma K^+ K^-$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

7.03 ± 0.92 ± 0.91	1.3k	¹ ABLIKIM	18i	BES3	$J/\psi \rightarrow \gamma\gamma\phi(1020)$
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10.36 ± 1.51 ± 1.54	1.9k	² ABLIKIM	18i	BES3	$J/\psi \rightarrow \gamma\gamma\phi(1020)$
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¹ Constructive interference between the $X(1835)$ and $\eta(1405)/\eta(1475)$ is assumed in a fit to the $\gamma\phi$ invariant mass.

² Destructive interference between the $X(1835)$ and $\eta(1405)/\eta(1475)$ is assumed in a fit to the $\gamma\phi$ invariant mass.

$\Gamma(\gamma\eta(1405) \rightarrow \gamma\gamma\gamma)/\Gamma_{\text{total}}$ Γ_{214}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<2.63 × 10⁻⁶	90	ABLIKIM	180	BES3 $\psi(2S) \rightarrow \pi^+\pi^-\gamma\gamma\gamma$
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$\Gamma(\gamma\eta(1475) \rightarrow \gamma\gamma\gamma)/\Gamma_{\text{total}}$ Γ_{215}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<1.86 × 10⁻⁶	90	ABLIKIM	180	BES3 $\psi(2S) \rightarrow \pi^+\pi^-\gamma\gamma\gamma$
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$\Gamma(\gamma\rho\rho)/\Gamma_{\text{total}}$ Γ_{216}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID	TECN	COMMENT
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4.5 ± 0.8 OUR AVERAGE

4.7 ± 0.3 ± 0.9		¹ BALTRUSAIT..86B	MRK3	$J/\psi \rightarrow 4\pi\gamma$
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3.75 ± 1.05 ± 1.20		² BURKE	82	MRK2 $J/\psi \rightarrow 4\pi\gamma$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.09	90	³ BISELLO	89B	$J/\psi \rightarrow 4\pi\gamma$
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¹ 4π mass less than 2.0 GeV.

² 4π mass less than 2.0 GeV. We have multiplied $2\rho^0$ measurement by 3 to obtain 2ρ .

³ 4π mass in the range 2.0–25 GeV.

$\Gamma(\gamma\rho\omega)/\Gamma_{\text{total}}$ Γ_{217}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<5.4 × 10⁻⁴	90	ABLIKIM	08A	BES2 $e^+e^- \rightarrow J/\psi$
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$\Gamma(\gamma\rho\phi)/\Gamma_{\text{total}}$ Γ_{218}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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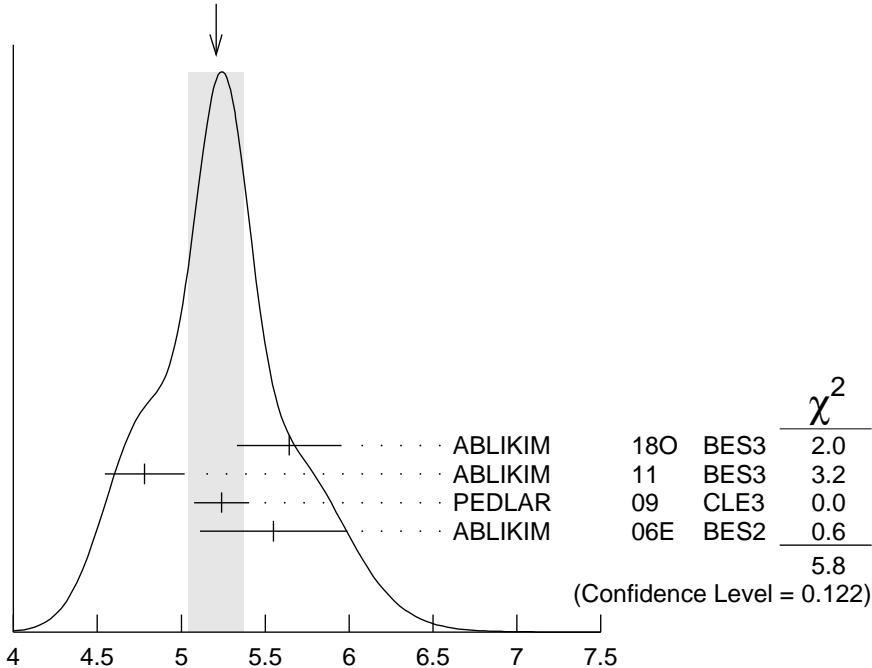
<8.8 × 10⁻⁵	90	ABLIKIM	08A	BES2 $e^+e^- \rightarrow J/\psi$
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$\Gamma(\gamma\eta'(958))/\Gamma_{\text{total}}$

Γ_{219}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
5.21±0.17 OUR AVERAGE		Error includes scale factor of 1.4.		See the ideogram below.
5.64±0.24±0.20	5.0k	¹ ABLIKIM	180 BES3	$\psi(2S) \rightarrow \pi^+ \pi^- \gamma\gamma\gamma$
4.78±0.22±0.08		² ABLIKIM	11 BES3	$J/\psi \rightarrow \eta' \gamma$
5.24±0.12±0.11		PEDLAR	09 CLE3	$J/\psi \rightarrow \eta' \gamma$
5.55±0.44	35k	ABLIKIM	06E BES2	$J/\psi \rightarrow \eta' \gamma$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
4.50±0.14±0.53		BOLTON	92B MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \eta, \eta \rightarrow \gamma\gamma$
4.30±0.31±0.71		BOLTON	92B MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \eta, \eta \rightarrow \pi^+ \pi^- \pi^0$
4.04±0.16±0.85	622	AUGUSTIN	90 DM2	$J/\psi \rightarrow \gamma \eta \pi^+ \pi^-$
4.39±0.09±0.66	2420	AUGUSTIN	90 DM2	$J/\psi \rightarrow \gamma \gamma \pi^+ \pi^-$
4.1 ±0.3 ±0.6		BLOOM	83 CBAL	$e^+ e^- \rightarrow 3\gamma + \text{hadrons}$
2.9 ±1.1	6	BRANDELIK	79C DASP	$e^+ e^- \rightarrow 3\gamma$
2.4 ±0.7	57	BARTEL	76 CNTR	$e^+ e^- \rightarrow 2\gamma\rho$

WEIGHTED AVERAGE
5.21±0.17 (Error scaled by 1.4)



$\Gamma(\gamma\eta'(958))/\Gamma_{\text{total}}$ (units 10^{-3})

¹ ABLIKIM 180 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma\eta'(958))/\Gamma_{\text{total}}] \times [B(\eta'(958) \rightarrow \gamma\gamma)] = (1.26 \pm 0.02 \pm 0.05) \times 10^{-4}$ from a measurement of $[\Gamma(J/\psi(1S) \rightarrow \gamma\eta'(958))/\Gamma_{\text{total}}] \times [B(\eta'(958) \rightarrow \gamma\gamma)] \times [B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)]$ assuming $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.49 \pm 0.30) \times 10^{-2}$, which we rescale to our best values $B(\eta'(958) \rightarrow \gamma\gamma) = (2.22 \pm 0.08) \times 10^{-2}$, $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.68 \pm 0.30) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

² ABLIKIM 11 reports $(4.84 \pm 0.03 \pm 0.24) \times 10^{-3}$ from a measurement of $[\Gamma(J/\psi(1S) \rightarrow \gamma\eta'(958))/\Gamma_{\text{total}}] / [B(\eta'(958) \rightarrow \pi^+\pi^-\eta)] / [B(\eta \rightarrow 2\gamma)]$ assuming $B(\eta'(958) \rightarrow \pi^+\pi^-\eta) = (43.2 \pm 0.7) \times 10^{-2}$, $B(\eta \rightarrow 2\gamma) = (39.31 \pm 0.20) \times 10^{-2}$, which we rescale to our best values $B(\eta'(958) \rightarrow \pi^+\pi^-\eta) = (42.6 \pm 0.7) \times 10^{-2}$, $B(\eta \rightarrow 2\gamma) = (39.41 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

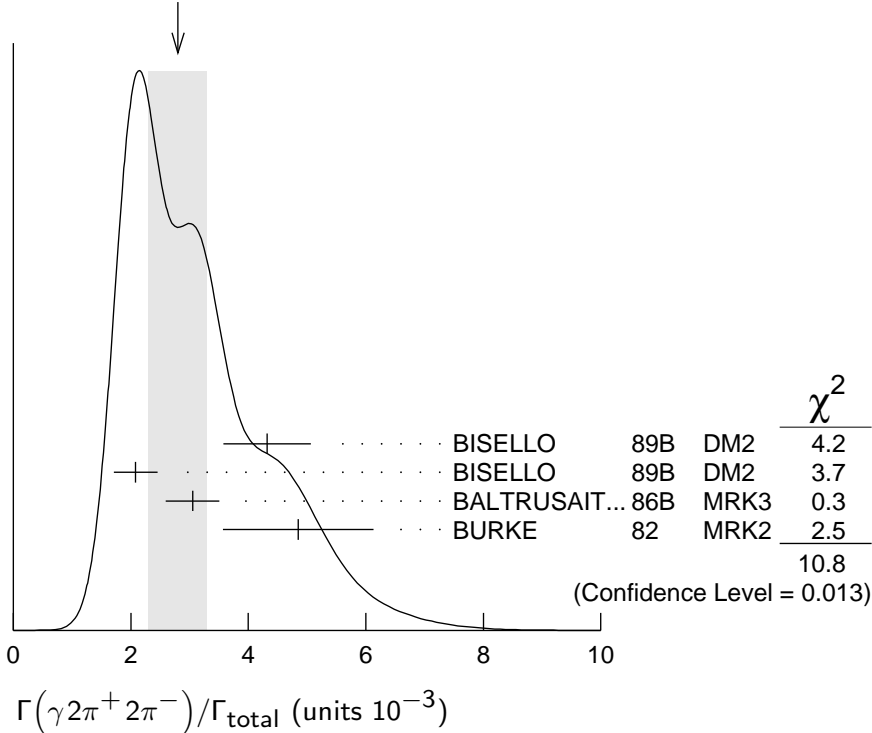
$\Gamma(\gamma 2\pi^+ 2\pi^-)/\Gamma_{\text{total}}$

Γ_{220}/Γ

<u>VALUE (units 10^{-3})</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2.8 ± 0.5 OUR AVERAGE	Error includes scale factor of 1.9. See the ideogram below.		
4.32 ± 0.14 ± 0.73	¹ BISELLO	89B DM2	$J/\psi \rightarrow 4\pi\gamma$
2.08 ± 0.13 ± 0.35	² BISELLO	89B DM2	$J/\psi \rightarrow 4\pi\gamma$
3.05 ± 0.08 ± 0.45	² BALTRUSAIT..	86B MRK3	$J/\psi \rightarrow 4\pi\gamma$
4.85 ± 0.45 ± 1.20	³ BURKE	82 MRK2	e^+e^-

- ¹ 4π mass less than 3.0 GeV.
- ² 4π mass less than 2.0 GeV.
- ³ 4π mass less than 2.5 GeV.

WEIGHTED AVERAGE
2.8±0.5 (Error scaled by 1.9)



$\Gamma(\gamma f_2(1270) f_2(1270))/\Gamma_{\text{total}}$

Γ_{221}/Γ

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

$\Gamma(\gamma f_2(1270) f_2(1270)(\text{non resonant}))/\Gamma_{\text{total}}$ Γ_{222}/Γ

VALUE (units 10^{-4})		DOCUMENT ID	TECN	COMMENT
8.2±0.8±1.7		¹ ABLIKIM	04M BES	$J/\psi \rightarrow \gamma 2\pi^+ 2\pi^-$

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

$\Gamma(\gamma K^+ K^- \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{223}/Γ

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

$\Gamma(\gamma f_4(2050))/\Gamma_{\text{total}}$ Γ_{224}/Γ

VALUE (units 10^{-3})		DOCUMENT ID	TECN	COMMENT
2.7±0.5±0.5		¹ BALTRUSAIT..87	MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^-$

¹ Assuming branching fraction $f_4(2050) \rightarrow \pi\pi/\text{total} = 0.167$.

$\Gamma(\gamma \omega \omega)/\Gamma_{\text{total}}$ Γ_{225}/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	$J/\psi \rightarrow \gamma \omega \pi^+ \pi^-$
1.41±0.2 ±0.42	120 ± 17	BISELLO	87 SPEC	$e^+ e^-$, hadrons γ
1.76±0.09±0.45		BALTRUSAIT..85C	MRK3	$e^+ e^- \rightarrow \text{hadrons } \gamma$

$\Gamma(\gamma \eta(1405/1475) \rightarrow \gamma \rho^0 \rho^0)/\Gamma_{\text{total}}$ Γ_{226}/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	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
1.36±0.38		^{1,2} BISELLO	89B DM2	$J/\psi \rightarrow 4\pi \gamma$

¹ Estimated by us from various fits.

² Includes unknown branching fraction to $\rho^0 \rho^0$.

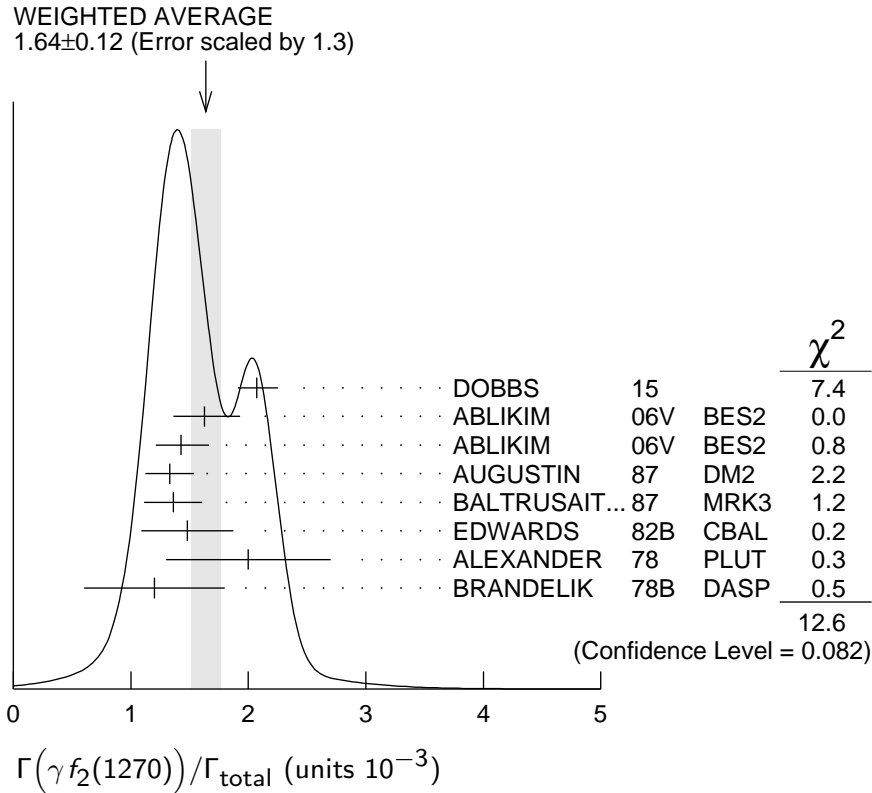
$\Gamma(\gamma f_2(1270))/\Gamma_{\text{total}}$ Γ_{227}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
1.64±0.12 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.		
2.07±0.16 ^{+0.02} _{-0.07}	2.4k	^{1,2} DOBBS	15	$J/\psi \rightarrow \gamma \pi \pi$
1.63±0.26 ^{+0.02} _{-0.06}		³ ABLIKIM	06V BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \pi^+ \pi^-$
1.42±0.21 ^{+0.01} _{-0.05}		⁴ ABLIKIM	06V BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \pi^0 \pi^0$
1.33±0.05±0.20		⁵ AUGUSTIN	87 DM2	$J/\psi \rightarrow \gamma \pi^+ \pi^-$
1.36±0.09±0.23		⁵ BALTRUSAIT..87	MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^-$
1.48±0.25±0.30	178	EDWARDS	82B CBAL	$e^+ e^- \rightarrow 2\pi^0 \gamma$
2.0 ±0.7	35	ALEXANDER	78 PLUT	$e^+ e^-$
1.2 ±0.6	30	⁶ BRANDELIK	78B DASP	$e^+ e^- \rightarrow \pi^+ \pi^- \gamma$

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

² DOBBS 15 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma f_2(1270))/\Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi\pi)] = (1.744 \pm 0.052 \pm 0.122) \times 10^{-3}$ which we divide by our best value $B(f_2(1270) \rightarrow \pi\pi) = (84.2^{+2.9}_{-0.9}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

- ³ ABLIKIM 06V reports $[\Gamma(J/\psi(1S) \rightarrow \gamma f_2(1270))/\Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi\pi)] = (1.371 \pm 0.010 \pm 0.222) \times 10^{-3}$ which we divide by our best value $B(f_2(1270) \rightarrow \pi\pi) = (84.2_{-0.9}^{+2.9}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
- ⁴ ABLIKIM 06V reports $[\Gamma(J/\psi(1S) \rightarrow \gamma f_2(1270))/\Gamma_{\text{total}}] \times [B(f_2(1270) \rightarrow \pi\pi)] = (1.200 \pm 0.027 \pm 0.174) \times 10^{-3}$ which we divide by our best value $B(f_2(1270) \rightarrow \pi\pi) = (84.2_{-0.9}^{+2.9}) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.
- ⁵ Estimated using $B(f_2(1270) \rightarrow \pi\pi) = 0.843 \pm 0.012$. The errors do not contain the uncertainty in the $f_2(1270)$ decay.
- ⁶ Restated by us to take account of spread of E1, M2, E3 transitions.



$\Gamma(\gamma f_2(1270) \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$				Γ_{228}/Γ
VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT	
2.58^{+0.08+0.59}_{-0.09-0.20}	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$	

$\Gamma(\gamma f_0(1370) \rightarrow \gamma K \bar{K})/\Gamma_{\text{total}}$				Γ_{229}/Γ
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	COMMENT	
4.19±0.73±1.34	478	¹ DOBBS 15	$J/\psi \rightarrow \gamma K \bar{K}$	

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\gamma f_0(1370) \rightarrow \gamma K_S^0 K_S^0) / \Gamma_{\text{total}}$ Γ_{230} / Γ

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
$1.07^{+0.08+0.36}_{-0.07-0.34}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$

$\Gamma(\gamma f_0(1500) \rightarrow \gamma K_S^0 K_S^0) / \Gamma_{\text{total}}$ Γ_{231} / Γ

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
$1.59 \pm 0.16^{+0.18}_{-0.56}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$

$\Gamma(\gamma f_0(1710) \rightarrow \gamma K \bar{K}) / \Gamma_{\text{total}}$ Γ_{232} / Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
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9.5 \pm 1.0 **OUR AVERAGE** Error includes scale factor of 1.5. See the ideogram below.

8.00 \pm 0.12 \pm 1.24 $-0.08 -0.40$			1	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$
11.76 \pm 0.54 \pm 0.94	1.2k		2	DOBBS	15	$J/\psi \rightarrow \gamma K \bar{K}$
9.62 \pm 0.29 \pm 3.51 -1.86			3	BAI	03G BES	$J/\psi \rightarrow \gamma K \bar{K}$
5.0 \pm 0.8 \pm 1.8 -0.4			1,4	BAI	96C BES	$J/\psi \rightarrow \gamma K^+ K^-$
9.2 \pm 1.4 \pm 1.4			1	AUGUSTIN	88 DM2	$J/\psi \rightarrow \gamma K^+ K^-$
10.4 \pm 1.2 \pm 1.6			1	AUGUSTIN	88 DM2	$J/\psi \rightarrow \gamma K_S^0 K_S^0$
9.6 \pm 1.2 \pm 1.8			1	BALTRUSAIT..87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$

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

1.6 \pm 0.2 \pm 0.6 -0.2			1,5	BAI	96C BES	$J/\psi \rightarrow \gamma K^+ K^-$
< 0.8	90		6	BISELLO	89B	$J/\psi \rightarrow 4\pi\gamma$
1.6 \pm 0.4 \pm 0.3			7	BALTRUSAIT..87	MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-$
3.8 \pm 1.6			8	EDWARDS	82D CBAL	$e^+e^- \rightarrow \eta\eta\gamma$

¹ Includes unknown branching fraction to $K^+ K^-$ or $K_S^0 K_S^0$. We have multiplied $K^+ K^-$ measurement by 2, and $K_S^0 K_S^0$ by 4 to obtain $K \bar{K}$ result.

² Using CLEO-c data but not authored by the CLEO Collaboration.

³ Includes unknown branching ratio to $K^+ K^-$ or $K_S^0 K_S^0$.

⁴ Assuming $J^P = 2^+$ for $f_0(1710)$.

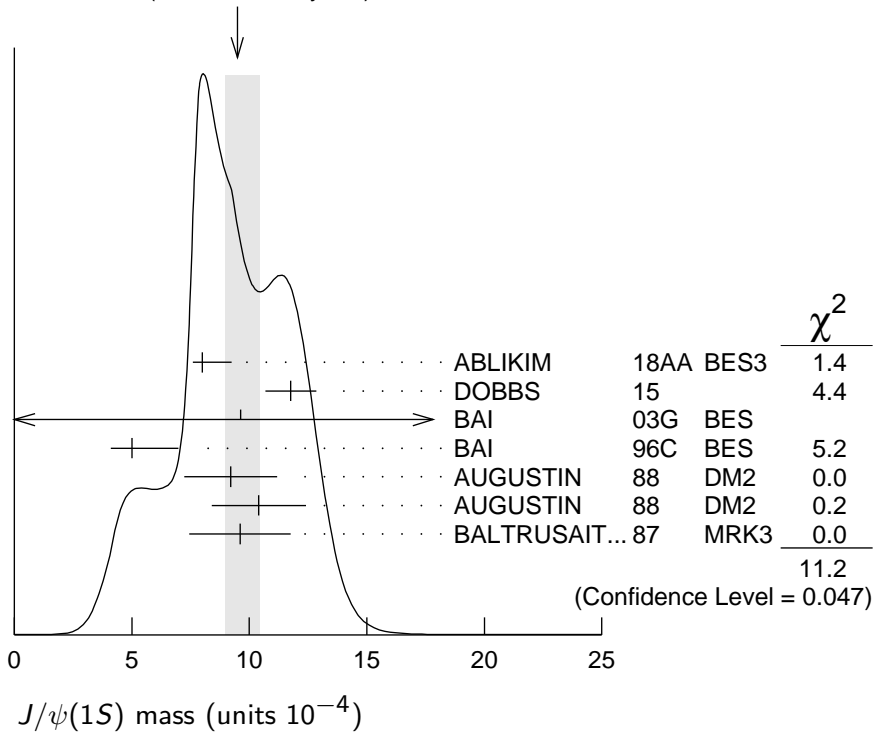
⁵ Assuming $J^P = 0^+$ for $f_0(1710)$.

⁶ Includes unknown branching fraction to $\rho^0 \rho^0$.

⁷ Includes unknown branching fraction to $\pi^+ \pi^-$.

⁸ Includes unknown branching fraction to $\eta\eta$.

WEIGHTED AVERAGE
 $9.5 \pm 1.0 - 0.5$ (Error scaled by 1.5)



$\Gamma(\gamma f_0(1710) \rightarrow \gamma \pi \pi) / \Gamma_{\text{total}}$ **Γ_{233} / Γ**

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
3.8 ± 0.5	OUR AVERAGE			
$3.72 \pm 0.30 \pm 0.43$	483	¹ DOBBS	15	$J/\psi \rightarrow \gamma \pi \pi$
$3.96 \pm 0.06 \pm 1.12$		² ABLIKIM	06V BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \pi^+ \pi^-$
$3.99 \pm 0.15 \pm 2.64$		² 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	$J/\psi \rightarrow \gamma \pi^0 \pi^0$

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

² Including unknown branching fraction to $\pi \pi$.

$\Gamma(\gamma f_0(1710) \rightarrow \gamma \omega \omega) / \Gamma_{\text{total}}$ **Γ_{234} / Γ**

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

$\Gamma(\gamma f_0(1710) \rightarrow \gamma \eta \eta) / \Gamma_{\text{total}}$ **Γ_{235} / Γ**

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$2.35^{+0.13+1.24}_{-0.11-0.74}$	5.5k	¹ ABLIKIM	13N BES3	$J/\psi \rightarrow \gamma \eta \eta$

¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

$\Gamma(\gamma\eta)/\Gamma_{\text{total}}$ Γ_{236}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
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1.108 ± 0.027 OUR AVERAGE

1.12 ± 0.05 ± 0.01	18.6k	¹ ABLIKIM	180	BES3 $\psi(2S) \rightarrow \pi^+ \pi^- \gamma \gamma \gamma$
1.101 ± 0.029 ± 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 ± 0.08 ± 0.11		BLOOM	83	CBAL $e^+ e^-$
0.82 ± 0.10		BRANDELIK	79C	DASP $e^+ e^-$
1.3 ± 0.4	21	BARTEL	77	CNTR $e^+ e^-$

¹ ABLIKIM 180 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma\eta)/\Gamma_{\text{total}}] \times [B(\eta \rightarrow 2\gamma)] = (4.42 \pm 0.04 \pm 0.18) \times 10^{-4}$ from a measurement of $[\Gamma(J/\psi(1S) \rightarrow \gamma\eta)/\Gamma_{\text{total}}] \times [B(\eta \rightarrow 2\gamma)] \times [B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)]$ assuming $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.49 \pm 0.30) \times 10^{-2}$, which we rescale to our best values $B(\eta \rightarrow 2\gamma) = (39.41 \pm 0.20) \times 10^{-2}$, $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.68 \pm 0.30) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

 $\Gamma(\gamma f_1(1420) \rightarrow \gamma K \bar{K} \pi)/\Gamma_{\text{total}}$ Γ_{237}/Γ

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
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0.79 ± 0.13 OUR AVERAGE

0.68 ± 0.04 ± 0.24	BAI	00D	BES $J/\psi \rightarrow \gamma K^\pm K_S^0 \pi^\mp$
0.76 ± 0.15 ± 0.21	^{1,2} AUGUSTIN	92	DM2 $J/\psi \rightarrow \gamma K \bar{K} \pi$
0.87 ± 0.14 ^{+0.14} _{-0.11}	¹ BAI	90C	MRK3 $J/\psi \rightarrow \gamma K_S^0 K^\pm \pi^\mp$

¹ Included unknown branching fraction $f_1(1420) \rightarrow K \bar{K} \pi$.

² From fit to the $K^*(892) K 1^{++}$ partial wave.

 $\Gamma(\gamma f_1(1285))/\Gamma_{\text{total}}$ Γ_{238}/Γ

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
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0.61 ± 0.08 OUR AVERAGE

0.69 ± 0.16 ± 0.20	¹ BAI	04J	BES2 $J/\psi \rightarrow \gamma \gamma \rho^0$
0.61 ± 0.04 ± 0.21	² BAI	00D	BES $J/\psi \rightarrow \gamma K^\pm K_S^0 \pi^\mp$
0.45 ± 0.09 ± 0.17	³ BAI	99	BES $J/\psi \rightarrow \gamma \eta \pi^+ \pi^-$
0.625 ± 0.063 ± 0.103	⁴ BOLTON	92	MRK3 $J/\psi \rightarrow \gamma f_1(1285)$
0.70 ± 0.08 ± 0.16	⁵ BOLTON	92B	MRK3 $J/\psi \rightarrow \gamma \eta \pi^+ \pi^-$

¹ Assuming $B(f_1(1285) \rightarrow \rho^0 \gamma) = 0.055 \pm 0.013$.

² Assuming $\Gamma(f_1(1285) \rightarrow K \bar{K} \pi)/\Gamma_{\text{total}} = 0.090 \pm 0.004$.

³ Assuming $\Gamma(f_1(1285) \rightarrow \eta \pi \pi)/\Gamma_{\text{total}} = 0.5 \pm 0.18$.

⁴ Obtained summing the sequential decay channels

$B(J/\psi \rightarrow \gamma f_1(1285), f_1(1285) \rightarrow \pi \pi \pi \pi) = (1.44 \pm 0.39 \pm 0.27) \times 10^{-4}$;
 $B(J/\psi \rightarrow \gamma f_1(1285), f_1(1285) \rightarrow a_0(980) \pi, a_0(980) \rightarrow \eta \pi) = (3.90 \pm 0.42 \pm 0.87) \times 10^{-4}$;

$B(J/\psi \rightarrow \gamma f_1(1285), f_1(1285) \rightarrow a_0(980) \pi, a_0(980) \rightarrow K \bar{K}) = (0.66 \pm 0.26 \pm 0.29) \times 10^{-4}$;

$B(J/\psi \rightarrow \gamma f_1(1285), f_1(1285) \rightarrow \gamma \rho^0) = (0.25 \pm 0.07 \pm 0.03) \times 10^{-4}$.

⁵ Using $B(f_1(1285) \rightarrow a_0(980) \pi) = 0.37$, and including unknown branching ratio for $a_0(980) \rightarrow \eta \pi$.

$\Gamma(\gamma f_1(1510) \rightarrow \gamma \eta \pi^+ \pi^-) / \Gamma_{\text{total}}$ Γ_{239} / Γ

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

$\Gamma(\gamma f'_2(1525)) / \Gamma_{\text{total}}$ Γ_{240} / Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
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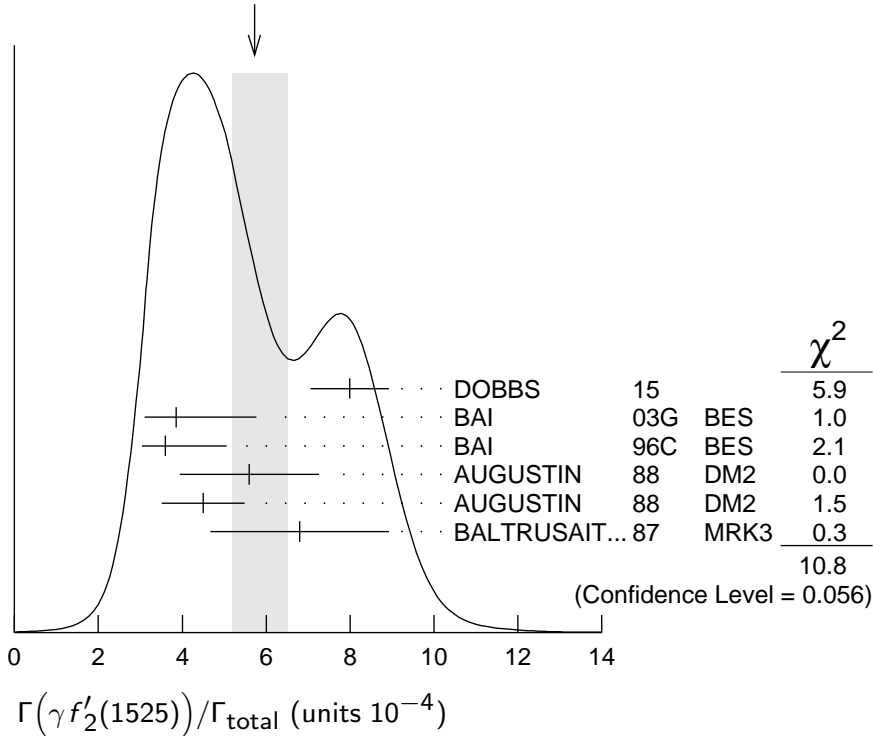
$5.7^{+0.8}_{-0.5}$ OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.

$8.0 \pm 0.9 \pm 0.2$	750	1,2	DOBBS	15	$J/\psi \rightarrow \gamma K \bar{K}$
$3.85 \pm 0.17^{+1.91}_{-0.73}$		3	BAI	03G	BES $J/\psi \rightarrow \gamma K \bar{K}$
$3.6 \pm 0.4^{+1.4}_{-0.4}$		3	BAI	96C	BES $J/\psi \rightarrow \gamma K^+ K^-$
$5.6 \pm 1.4 \pm 0.9$		3	AUGUSTIN	88	DM2 $J/\psi \rightarrow \gamma K^+ K^-$
$4.5 \pm 0.4 \pm 0.9$		3	AUGUSTIN	88	DM2 $J/\psi \rightarrow \gamma K_S^0 K_S^0$
$6.8 \pm 1.6 \pm 1.4$		3	BALTRUSAIT..87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$

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

<3.4	90	4	4	BRANDELIK	79C	DASP	$e^+ e^- \rightarrow \pi^+ \pi^- \gamma$
<2.3	90	3		ALEXANDER	78	PLUT	$e^+ e^- \rightarrow K^+ K^- \gamma$

WEIGHTED AVERAGE
 $5.7 \pm 0.8 \pm 0.5$ (Error scaled by 1.5)



¹ Using CLEO-c data but not authored by the CLEO Collaboration.

² DOBBS 15 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma f'_2(1525)) / \Gamma_{\text{total}}] \times [B(f'_2(1525) \rightarrow K \bar{K})] = (7.09 \pm 0.46 \pm 0.67) \times 10^{-4}$ which we divide by our best value $B(f'_2(1525) \rightarrow K \bar{K}) = (88.7 \pm 2.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

³ Using $B(f'_2(1525) \rightarrow K\bar{K}) = 0.888$.

⁴ Assuming isotropic production and decay of the $f'_2(1525)$ and isospin.

$\Gamma(\gamma f'_2(1525) \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$				Γ_{241}/Γ
VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT	
$7.99^{+0.03+0.69}_{-0.04-0.50}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$	

$\Gamma(\gamma f'_2(1525) \rightarrow \gamma \eta \eta)/\Gamma_{\text{total}}$				Γ_{242}/Γ
VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
$3.42^{+0.43+1.37}_{-0.51-1.30}$	5.5k	¹ ABLIKIM	13N BES3	$J/\psi \rightarrow \gamma \eta \eta$

¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

$\Gamma(\gamma f_2(1640) \rightarrow \gamma \omega \omega)/\Gamma_{\text{total}}$				Γ_{243}/Γ
VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
$0.28 \pm 0.05 \pm 0.17$	141	ABLIKIM	06H BES	$J/\psi \rightarrow \gamma \omega \omega$

$\Gamma(\gamma f_2(1910) \rightarrow \gamma \omega \omega)/\Gamma_{\text{total}}$				Γ_{244}/Γ
VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
$0.20 \pm 0.04 \pm 0.13$	151	ABLIKIM	06H BES	$J/\psi \rightarrow \gamma \omega \omega$

$\Gamma(\gamma f_0(1750) \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$				Γ_{245}/Γ
VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT	
$1.11 \pm 0.06^{+0.19}_{-0.32}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$	

$\Gamma(\gamma f_0(1800) \rightarrow \gamma \omega \phi)/\Gamma_{\text{total}}$				Γ_{246}/Γ
VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
2.5 ± 0.6 OUR AVERAGE				
$2.00 \pm 0.08^{+1.38}_{-1.64}$	1.3k	ABLIKIM	13J BES3	$J/\psi \rightarrow \gamma \omega \phi$
$2.61 \pm 0.27 \pm 0.65$	95	ABLIKIM	06J BES2	$J/\psi \rightarrow \gamma \omega \phi$

$\Gamma(\gamma f_2(1810) \rightarrow \gamma \eta \eta)/\Gamma_{\text{total}}$				Γ_{247}/Γ
VALUE (units 10^{-5})	EVTS	DOCUMENT ID	COMMENT	
$5.40^{+0.60+3.42}_{-0.67-2.35}$	5.5k	¹ ABLIKIM	13N $J/\psi \rightarrow \gamma \eta \eta$	

¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

$\Gamma(\gamma f_2(1950) \rightarrow \gamma K^*(892)\bar{K}^*(892))/\Gamma_{\text{total}}$				Γ_{248}/Γ
VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT	
$0.7 \pm 0.1 \pm 0.2$	BAI	00B BES	$J/\psi \rightarrow \gamma K^+ K^0 \pi^+ \pi^-$	

$\Gamma(\gamma K^*(892)\bar{K}^*(892))/\Gamma_{\text{total}}$

Γ_{249}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
$4.0 \pm 0.3 \pm 1.3$	320	¹ BAI	00B BES	$J/\psi \rightarrow \gamma K^+ K^0 \pi^+ \pi^-$

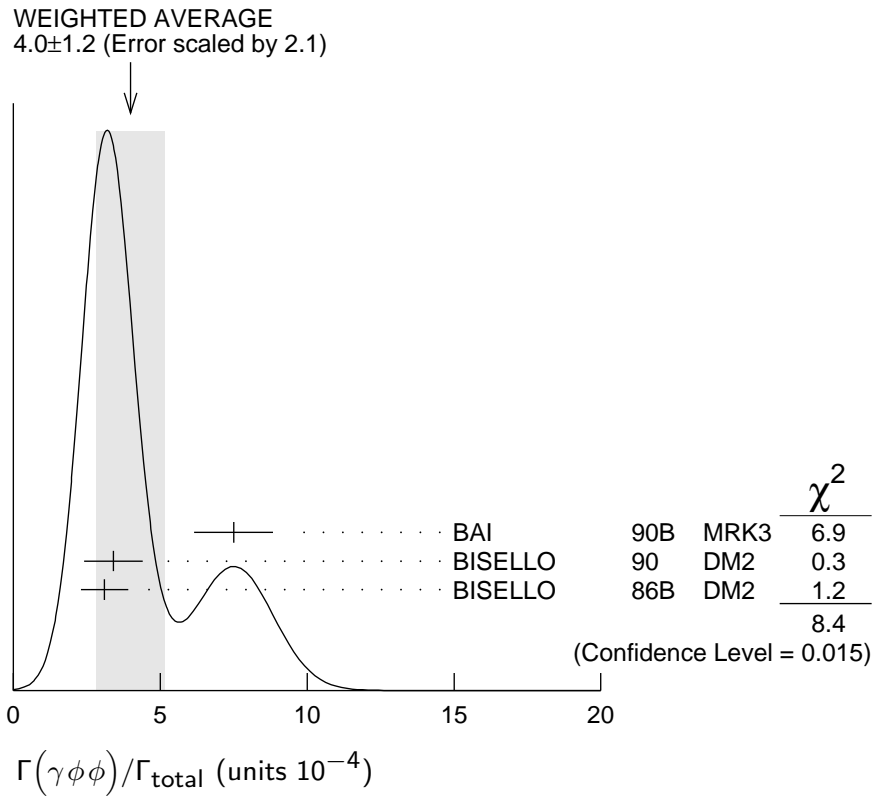
¹ Summed over all charges.

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

Γ_{250}/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.
$7.5 \pm 0.6 \pm 1.2$	168	BAI	90B MRK3	$J/\psi \rightarrow \gamma 4K$
$3.4 \pm 0.8 \pm 0.6$	33 ± 7	¹ BISELLO	90 DM2	$J/\psi \rightarrow \gamma K^+ K^- K_S^0 K_L^0$
$3.1 \pm 0.7 \pm 0.4$		¹ BISELLO	86B DM2	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$

¹ $\phi\phi$ mass less than 2.9 GeV, η_C excluded.



$\Gamma(\gamma\rho\rho)/\Gamma_{\text{total}}$

Γ_{251}/Γ

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$0.38 \pm 0.07 \pm 0.07$		49	EATON	84	MRK2 $e^+ e^-$

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

<0.11	90	PERUZZI	78	MRK1 $e^+ e^-$
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$\Gamma(\gamma\eta(2225))/\Gamma_{\text{total}}$ Γ_{252}/Γ

VALUE (units 10^{-4}) EVTS DOCUMENT ID TECN COMMENT

3.14^{+0.50}_{-0.19} OUR AVERAGE

2.40 ± 0.10 ^{+2.47} _{-0.18}		1,2 ABLIKIM	16N	BES3	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$
4.4 ± 0.4 ± 0.8	196	2 ABLIKIM	08I	BES	$J/\psi \rightarrow \gamma K^+ K^- K_S^0 K_L^0$
3.3 ± 0.8 ± 0.5		2 BAI	90B	MRK3	$J/\psi \rightarrow \gamma K^+ K^- K^+ K^-$
2.7 ± 0.6 ± 0.6		2 BAI	90B	MRK3	$J/\psi \rightarrow \gamma K^+ K^- K_S^0 K_L^0$
2.4 ^{+1.5} _{-1.0}		3,4 BISELLO	89B	DM2	$J/\psi \rightarrow 4\pi\gamma$

¹ From a partial wave analysis of $J/\psi \rightarrow \gamma\phi\phi$ that also finds significant signals for for $\eta(2100)$, 0^-+ phase space, $f_0(2100)$, $f_2(2010)$, $f_2(2300)$, $f_2(2340)$, and a previously unseen 0^-+ state $X(2500)$ ($M = 2470^{+15+101}_{-19-23}$ MeV, $\Gamma = 230^{+64+56}_{-35-33}$ MeV).

² Includes unknown branching fraction to $\phi\phi$.

³ Estimated by us from various fits.

⁴ Includes unknown branching fraction to $\rho^0\rho^0$.

$\Gamma(\gamma\eta(1760) \rightarrow \gamma\rho^0\rho^0)/\Gamma_{\text{total}}$ Γ_{253}/Γ

VALUE (units 10^{-3}) DOCUMENT ID TECN COMMENT

0.13 ± 0.09		1,2 BISELLO	89B	DM2	$J/\psi \rightarrow 4\pi\gamma$
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¹ Estimated by us from various fits.

² Includes unknown branching fraction to $\rho^0\rho^0$.

$\Gamma(\gamma\eta(1760) \rightarrow \gamma\omega\omega)/\Gamma_{\text{total}}$ Γ_{254}/Γ

VALUE (units 10^{-3}) EVTS DOCUMENT ID TECN COMMENT

1.98 ± 0.08 ± 0.32	1045	ABLIKIM	06H	BES	$J/\psi \rightarrow \gamma\omega\omega$
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$\Gamma(\gamma\eta(1760) \rightarrow \gamma\gamma\gamma)/\Gamma_{\text{total}}$ Γ_{255}/Γ

VALUE CL% DOCUMENT ID TECN COMMENT

< 4.80 × 10⁻⁶	90	ABLIKIM	180	BES3	$\psi(2S) \rightarrow \pi^+\pi^-\gamma\gamma\gamma$
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$\Gamma(\gamma X(1835) \rightarrow \gamma\pi^+\pi^-\eta')/\Gamma_{\text{total}}$ Γ_{256}/Γ

VALUE (units 10^{-4}) EVTS DOCUMENT ID TECN COMMENT

2.77^{+0.34}_{-0.40} OUR AVERAGE Error includes scale factor of 1.1.

3.93 ± 0.38 ^{+0.31} _{-0.84}		1 ABLIKIM	16J	BES3	$J/\psi \rightarrow \gamma\pi^+\pi^-\eta'$
2.87 ± 0.09 ^{+0.49} _{-0.52}	4265	2 ABLIKIM	11C	BES3	$J/\psi \rightarrow \gamma\pi^+\pi^-\eta'$
2.2 ± 0.4 ± 0.4	264	ABLIKIM	05R	BES2	$J/\psi \rightarrow \gamma\pi^+\pi^-\eta'$

¹ From a fit of the measured $\pi^+\pi^-\eta'$ lineshape that accounts for the abrupt distortion observed at the $p\bar{p}$ threshold with a Flatte formula in addition to known backgrounds and contributors, as well as an *ad hoc* Breit-Wigner ($M \approx 1919$ MeV; $\Gamma \approx 51$ MeV) that is required for a good fit. Another explanation for the distortion provided by ABLIKIM 16J is that a second resonance near 1870 MeV interferes with the $X(1835)$; fits to this possibility yield product branching fraction values compatible with that shown within the respective systematic uncertainties.

² From a fit of the $\pi^+\pi^-\eta'$ mass distribution to a combination of $\gamma f_1(1510)$, $\gamma X(1835)$, and two unconfirmed states $\gamma X(2120)$, and $\gamma X(2370)$, for $M(p\bar{p}) < 2.8$ GeV, and accounting for backgrounds from non- η' events and $J/\psi \rightarrow \pi^0\pi^+\pi^-\eta'$.

$\Gamma(\gamma X(1835) \rightarrow \gamma p \bar{p})/\Gamma_{\text{total}}$ Γ_{257}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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0.77^{+0.15}_{-0.09} OUR AVERAGE

0.90 ^{+0.04+0.27} _{-0.11-0.55}		¹ ABLIKIM	12D	BES3	$J/\psi \rightarrow \gamma p \bar{p}$
1.14 ^{+0.43+0.42} _{-0.30-0.26}	231	² ALEXANDER	10	CLEO	$J/\psi \rightarrow \gamma p \bar{p}$
0.70 \pm 0.04 ^{+0.19} _{-0.08}		BAI	03F	BES2	$J/\psi \rightarrow \gamma p \bar{p}$

¹ From the fit including final state interaction effects in isospin 0 S -wave according to SIBIRTSEV 05A.

² From a fit of the $p \bar{p}$ mass distribution to a combination of $\gamma X(1835)$, γR with $M(R) = 2100$ MeV and $\Gamma(R) = 160$ MeV, and $\gamma p \bar{p}$ phase space, for $M(p \bar{p}) < 2.85$ GeV.

$\Gamma(\gamma X(1835) \rightarrow \gamma K_S^0 K_S^0 \eta)/\Gamma_{\text{total}}$ Γ_{258}/Γ

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
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3.31^{+0.33+1.96}_{-0.30-1.29}	ABLIKIM	15T	BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0 \eta$
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$\Gamma(\gamma X(1835) \rightarrow \gamma \gamma \phi(1020))/\Gamma_{\text{total}}$ Γ_{259}/Γ

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

1.77 \pm 0.35 \pm 0.25	305	¹ ABLIKIM	18i	BES3	$J/\psi \rightarrow \gamma \gamma \phi(1020)$
8.09 \pm 1.99 \pm 1.36	1.3k	² ABLIKIM	18i	BES3	$J/\psi \rightarrow \gamma \gamma \phi(1020)$

¹ Constructive interference between the $X(1835)$ and $\eta(1405)/\eta(1475)$ is assumed in a fit to the $\gamma \phi$ invariant mass.

² Destructive interference between the $X(1835)$ and $\eta(1405)/\eta(1475)$ is assumed in a fit to the $\gamma \phi$ invariant mass.

$\Gamma(\gamma X(1835) \rightarrow \gamma \gamma \gamma)/\Gamma_{\text{total}}$ Γ_{260}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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$<3.56 \times 10^{-6}$	90	ABLIKIM	180	BES3	$\psi(2S) \rightarrow \pi^+ \pi^- \gamma \gamma \gamma$
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$\Gamma(\gamma X(1840) \rightarrow \gamma 3(\pi^+ \pi^-))/\Gamma_{\text{total}}$ Γ_{261}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
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2.44\pm0.36^{+0.60}_{-0.74}	0.6k	ABLIKIM	13U	BES3	$J/\psi \rightarrow \gamma 3(\pi^+ \pi^-)$
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$\Gamma(\gamma(K \bar{K} \pi) [J^{PC} = 0^{-+}])/ \Gamma_{\text{total}}$ Γ_{262}/Γ

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
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0.7 \pm 0.4 OUR AVERAGE Error includes scale factor of 2.1.

0.58 \pm 0.03 \pm 0.20	¹ BAI	00D	BES	$J/\psi \rightarrow \gamma K^\pm K_S^0 \pi^\mp$
2.1 \pm 0.1 \pm 0.7	² BAI	00D	BES	$J/\psi \rightarrow \gamma K^\pm K_S^0 \pi^\mp$

¹ For a broad structure around 1800 MeV.

² For a broad structure around 2040 MeV.

$\Gamma(\gamma\pi^0)/\Gamma_{\text{total}}$ Γ_{263}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
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3.56±0.17 OUR AVERAGE

3.59±0.20±0.03	1.6k	¹ ABLIKIM	180	BES3 $\psi(2S) \rightarrow \pi^+\pi^-\gamma\gamma$
3.63±0.36±0.13		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 ± 1.1 ± 0.7		BLOOM	83	CBAL e^+e^-
7.3 ± 4.7	10	BRANDELIK	79C	DASP e^+e^-

¹ ABLIKIM 180 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma\pi^0)/\Gamma_{\text{total}}] \times [B(\pi^0 \rightarrow 2\gamma)] = (3.57 \pm 0.12 \pm 0.16) \times 10^{-5}$ from a measurement of $[\Gamma(J/\psi(1S) \rightarrow \gamma\pi^0)/\Gamma_{\text{total}}] \times [B(\pi^0 \rightarrow 2\gamma)] \times [B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)]$ assuming $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.49 \pm 0.30) \times 10^{-2}$, which we rescale to our best values $B(\pi^0 \rightarrow 2\gamma) = (98.823 \pm 0.034) \times 10^{-2}$, $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (34.68 \pm 0.30) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best values.

$\Gamma(\gamma\rho\bar{p}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{264}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<0.79 × 10⁻³	90	EATON	84	MRK2 e^+e^-
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$\Gamma(\gamma\Lambda\bar{\Lambda})/\Gamma_{\text{total}}$ Γ_{265}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<0.13 × 10⁻³	90	HENRARD	87	DM2 e^+e^-
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.16 × 10 ⁻³	90	BAI	98G	BES e^+e^-
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$\Gamma(\gamma f_0(2100) \rightarrow \gamma\eta\eta)/\Gamma_{\text{total}}$ Γ_{266}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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1.13^{+0.09+0.64}_{-0.10-0.28}	5.5k	¹ ABLIKIM	13N	BES3 $J/\psi \rightarrow \gamma\eta\eta$
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¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

$\Gamma(\gamma f_0(2100) \rightarrow \gamma\pi\pi)/\Gamma_{\text{total}}$ Γ_{267}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	COMMENT
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6.24±0.48±0.87	744	¹ DOBBS	15 $J/\psi \rightarrow \gamma\pi\pi$
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¹ Using CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\gamma f_0(2200))/\Gamma_{\text{total}}$ Γ_{268}/Γ

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

1.5	¹ AUGUSTIN	88	DM2 $J/\psi \rightarrow \gamma K_S^0 K_S^0$
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¹ Includes unknown branching fraction to $K_S^0 K_S^0$.

$\Gamma(\gamma f_0(2200) \rightarrow \gamma K \bar{K})/\Gamma_{\text{total}}$ Γ_{269}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$5.86 \pm 0.49 \pm 1.20$	490	¹ DOBBS	15	$J/\psi \rightarrow \gamma K \bar{K}$

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\gamma f_0(2200) \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{270}/Γ

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
$2.72^{+0.08+0.17}_{-0.06-0.47}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$

$\Gamma(\gamma f_J(2220))/\Gamma_{\text{total}}$ Γ_{271}/Γ

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

>300			¹ BAI	96B	BES	$e^+ e^- \rightarrow \gamma \bar{p} p, K \bar{K}$
>250	99.9		² HASAN	96	SPEC	$\bar{p} p \rightarrow \pi^+ \pi^-$
< 2.3	95		³ AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^+ K^-$
< 1.6	95		³ AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K_S^0 K_S^0$
$12.4^{+6.4}_{-5.2} \pm 2.8$		23	³ BALTRUSAIT..86D	MRK3		$J/\psi \rightarrow \gamma K_S^0 K_S^0$
$8.4^{+3.4}_{-2.8} \pm 1.6$		93	³ BALTRUSAIT..86D	MRK3		$J/\psi \rightarrow \gamma K^+ K^-$

¹ Using BARNES 93.

² Using BAI 96B.

³ Includes unknown branching fraction to $K^+ K^-$ or $K_S^0 K_S^0$.

$\Gamma(\gamma f_J(2220) \rightarrow \gamma \pi \pi)/\Gamma_{\text{total}}$ Γ_{272}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
< 3.9	90	^{1,2} DOBBS	15	$J/\psi \rightarrow \gamma \pi \pi$

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

14 ± 8 ± 4		BAI	98H	BES	$J/\psi \rightarrow \gamma \pi^0 \pi^0$
$8.4 \pm 2.6 \pm 3.0$		BAI	96B	BES	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \pi^+ \pi^-$

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

² For $\Gamma = 20/50$ MeV, the 90% CL upper limits for $\pi^+ \pi^-$ and $\pi^0 \pi^0$ are $2.6/5.2 \times 10^{-5}$ and $1.3/1.9 \times 10^{-5}$, respectively.

$\Gamma(\gamma f_J(2220) \rightarrow \gamma K \bar{K})/\Gamma_{\text{total}}$ Γ_{273}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
< 4.1	90	^{1,2} DOBBS	15	$J/\psi \rightarrow \gamma K \bar{K}$

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

< 3.6		³ DEL-AMO-SA...100	BABR	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma K^+ K^-$	
< 2.9		³ DEL-AMO-SA...100	BABR	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma K_S^0 K_S^0$	
$6.6 \pm 2.9 \pm 2.4$		BAI	96B	BES	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma K^+ K^-$
$10.8 \pm 4.0 \pm 3.2$		BAI	96B	BES	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma K_S^0 K_S^0$

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

² For $\Gamma = 20/50$ MeV, the 90% CL upper limits for $K^+ K^-$ and $K_S^0 K_S^0$ are $1.7/3.1 \times 10^{-5}$ and $1.2/2.0 \times 10^{-5}$, respectively.

³ For spin 2 and helicity 0; other combinations lead to more stringent upper limits.

$\Gamma(\gamma f_J(2220) \rightarrow \gamma p \bar{p})/\Gamma_{\text{total}}$ Γ_{274}/Γ

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

$\Gamma(\gamma f_0(2330) \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{275}/Γ

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
$4.95 \pm 0.21^{+0.66}_{-0.72}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$

$\Gamma(\gamma f_2(2340) \rightarrow \gamma \eta \eta)/\Gamma_{\text{total}}$ Γ_{276}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
$5.60^{+0.62+2.37}_{-0.65-2.07}$	5.5k	¹ ABLIKIM	13N BES3	$J/\psi \rightarrow \gamma \eta \eta$

¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

$\Gamma(\gamma f_2(2340) \rightarrow \gamma K_S^0 K_S^0)/\Gamma_{\text{total}}$ Γ_{277}/Γ

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
$5.54^{+0.34+3.82}_{-0.40-1.49}$	ABLIKIM	18AA BES3	$J/\psi \rightarrow \gamma K_S^0 K_S^0$

$\Gamma(\gamma f_0(1500) \rightarrow \gamma \pi \pi)/\Gamma_{\text{total}}$ Γ_{278}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
1.09 ± 0.24 OUR AVERAGE				
1.21 \pm 0.29 \pm 0.24	174	¹ DOBBS	15	$J/\psi \rightarrow \gamma \pi \pi$
1.00 \pm 0.03 \pm 0.45		² ABLIKIM	06V BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \pi^+ \pi^-$
1.02 \pm 0.09 \pm 0.45		² 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. • • •				
5.7 \pm 0.8		^{3,4} BUGG	95 MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$

¹ Using CLEO-c data but not authored by the CLEO Collaboration.

² Including unknown branching fraction to $\pi \pi$.

³ Including unknown branching ratio for $f_0(1500) \rightarrow \pi^+ \pi^- \pi^+ \pi^-$.

⁴ Assuming that $f_0(1500)$ decays only to two S -wave dipions.

$\Gamma(\gamma f_0(1500) \rightarrow \gamma \eta \eta)/\Gamma_{\text{total}}$ Γ_{279}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
$1.65^{+0.26+0.51}_{-0.31-1.40}$	5.5k	¹ ABLIKIM	13N BES3	$J/\psi \rightarrow \gamma \eta \eta$

¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

$\Gamma(\gamma A \rightarrow \gamma \text{invisible})/\Gamma_{\text{total}}$ Γ_{280}/Γ
 (narrow state A with $m_A < 960$ MeV)

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$< 6.3 \times 10^{-6}$	90	¹ INSLER	10 CLEO	$e^+ e^- \rightarrow \pi^+ \pi^- J/\psi$

¹ The limit varies with mass m_A of a narrow state A and is 4.3×10^{-6} for $m_A = 0$ MeV, reaches its largest value of 6.3×10^{-6} at $m_A = 500$ MeV, and is 3.6×10^{-6} at $m_A = 960$ MeV.

$\Gamma(\gamma A^0 \rightarrow \gamma \mu^+ \mu^-)/\Gamma_{\text{total}}$ Γ_{281}/Γ
(narrow state A^0 with $0.2 \text{ GeV} < m_{A^0} < 3 \text{ GeV}$)

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<0.5 \times 10^{-5}$	90	¹ ABLIKIM	16E	BES3 $J/\psi \rightarrow \gamma \mu^+ \mu^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<2.1 \times 10^{-5}$	90	² ABLIKIM	12	BES3 $J/\psi \rightarrow \gamma \mu^+ \mu^-$

¹ For a narrow scalar or pseudoscalar, A^0 , with a mass in the range 0.212–3 GeV. The measured 90% CL limit as a function of m_{A^0} is in the range $(2.8\text{--}495.3) \times 10^{-8}$.

² For a narrow scalar or pseudoscalar, A^0 , with a mass in the range 0.21–3.00 GeV. The measured 90% CL limit as a function of m_{A^0} ranges from 4×10^{-7} to 2.1×10^{-5} .

————— DALITZ DECAYS —————

$\Gamma(\pi^0 e^+ e^-)/\Gamma_{\text{total}}$ Γ_{282}/Γ

VALUE (units 10^{-7})	EVTS	DOCUMENT ID	TECN	COMMENT
$7.56 \pm 1.32 \pm 0.50$	39	ABLIKIM	14I	BES3 $J/\psi \rightarrow \pi^0 e^+ e^-$

$\Gamma(\eta e^+ e^-)/\Gamma_{\text{total}}$ Γ_{283}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
$1.43 \pm 0.04 \pm 0.06$	2.47k	^{1,2} ABLIKIM	19A	BES3 $J/\psi \rightarrow \eta e^+ e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.16 \pm 0.07 \pm 0.06$	320	¹ ABLIKIM	14I	BES3 $J/\psi \rightarrow \eta e^+ e^-$

¹ Using both $\eta \rightarrow \gamma\gamma$ and $\eta \rightarrow \pi^+ \pi^- \pi^0$ decays.

² Approximation of the transition form factor squared as an incoherent sum of the ρ -meson and one-pole non-resonant amplitudes gives the pole mass $m(\Lambda) = 2.84 \pm 0.11 \pm 0.08$ GeV. Supersedes ABLIKIM 14I.

$\Gamma(\eta'(958) e^+ e^-)/\Gamma_{\text{total}}$ Γ_{284}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT
$6.59 \pm 0.07 \pm 0.17$	8.9k	¹ ABLIKIM	19H	BES3 $J/\psi \rightarrow \eta'(958) e^+ e^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$5.81 \pm 0.16 \pm 0.31$	1.4k	^{1,2} ABLIKIM	14I	BES3 $J/\psi \rightarrow \eta'(958) e^+ e^-$

¹ Using both $\eta' \rightarrow \gamma \pi^+ \pi^-$ and $\eta' \rightarrow \pi^+ \pi^- \eta$ decays.

² Superseded by ABLIKIM 19H.

$\Gamma(\eta U \rightarrow \eta e^+ e^-)/\Gamma_{\text{total}}$ Γ_{285}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<9.11 \times 10^{-7}$	90	¹ ABLIKIM	19A	BES3 $J/\psi \rightarrow \eta e^+ e^-$

¹ For a dark photon U with mass between 10 and 2400 MeV. Obtained 90% C.L. limits as a function of m_U range from 1.9×10^{-8} to 91.1×10^{-8} .

$\Gamma(\eta'(958) U \rightarrow \eta'(958) e^+ e^-)/\Gamma_{\text{total}}$ Γ_{286}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.0 \times 10^{-7}$	90	¹ ABLIKIM	19H	BES3 $J/\psi \rightarrow \eta'(958) e^+ e^-$

¹ For a dark photon U with mass between 100 and 2100 MeV. Obtained 90% C.L. limits as a function of m_U range from 1.8×10^{-8} to 2.0×10^{-7} . The corresponding limits on the branching fraction $J/\psi \rightarrow \eta' U$ range from 5.7×10^{-8} to 7.4×10^{-7} .

WEAK DECAYS

 $\Gamma(D^- e^+ \nu_e + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{287}/Γ

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

 $\Gamma(\bar{D}^0 e^+ e^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{288}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<8.5 \times 10^{-8}$	90	¹ ABLIKIM	17AF BES3	$e^+ e^- \rightarrow J/\psi$

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

$<1.1 \times 10^{-5}$	90	ABLIKIM	06M BES2	$e^+ e^- \rightarrow J/\psi$
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¹ Using D^0 decays to $K^- \pi^+$, $K^- \pi^+ \pi^0$, and $K^- \pi^+ \pi^+ \pi^-$.

 $\Gamma(D_s^- e^+ \nu_e + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{289}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.3 \times 10^{-6}$	90	ABLIKIM	14R BES3	$e^+ e^- \rightarrow J/\psi$

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

$<3.6 \times 10^{-5}$	90	¹ ABLIKIM	06M BES2	$e^+ e^- \rightarrow J/\psi$
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¹ Using $B(D_s^- \rightarrow \phi \pi^-) = 4.4 \pm 0.5 \%$.

 $\Gamma(D_s^{*-} e^+ \nu_e + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{290}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.8 \times 10^{-6}$	90	ABLIKIM	14R BES3	$e^+ e^- \rightarrow J/\psi$

 $\Gamma(D^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{291}/Γ

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

 $\Gamma(\bar{D}^0 \bar{K}^0 + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{292}/Γ

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

 $\Gamma(\bar{D}^0 \bar{K}^{*0} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{293}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.5 \times 10^{-6}$	90	ABLIKIM	14K BES3	$e^+ e^- \rightarrow J/\psi$

 $\Gamma(D_s^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{294}/Γ

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

 $\Gamma(D_s^- \rho^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{295}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.3 \times 10^{-5}$	90	ABLIKIM	14K BES3	$e^+ e^- \rightarrow J/\psi$

———— CHARGE CONJUGATION (C), PARITY (P), ————
 ———— LEPTON FAMILY NUMBER (LF) VIOLATING MODES ————

$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ Γ_{296}/Γ
VALUE CL% DOCUMENT ID TECN COMMENT

$< 2.7 \times 10^{-7}$	90	ABLIKIM	14Q	BES3	$\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
$< 0.5 \times 10^{-5}$	90	ADAMS	08	CLEO	$\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
$< 1.6 \times 10^{-4}$	90	¹ WICHT	08	BELL	$B^\pm \rightarrow K^\pm \gamma\gamma$
$< 2.2 \times 10^{-5}$	90	ABLIKIM	07J	BES2	$\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$
$< 50 \times 10^{-5}$	90	BARTEL	77	CNTR	$e^+ e^-$

¹WICHT 08 reports $[\Gamma(J/\psi(1S) \rightarrow \gamma\gamma)/\Gamma_{\text{total}}] \times [B(B^+ \rightarrow J/\psi(1S) K^+)] < 0.16 \times 10^{-6}$ which we divide by our best value $B(B^+ \rightarrow J/\psi(1S) K^+) = 1.010 \times 10^{-3}$.

$\Gamma(\gamma\phi)/\Gamma_{\text{total}}$ Γ_{297}/Γ
VALUE CL% DOCUMENT ID TECN COMMENT

$< 1.4 \times 10^{-6}$	90	ABLIKIM	14Q	BES3	$\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
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$\Gamma(e^\pm \mu^\mp)/\Gamma_{\text{total}}$ Γ_{298}/Γ
VALUE CL% DOCUMENT ID TECN COMMENT

$< 1.6 \times 10^{-7}$	90	ABLIKIM	13L	BES3	$e^+ e^- \rightarrow J/\psi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
$< 1.1 \times 10^{-6}$	90	BAI	03D	BES	$e^+ e^- \rightarrow J/\psi$

$\Gamma(e^\pm \tau^\mp)/\Gamma_{\text{total}}$ Γ_{299}/Γ
VALUE CL% DOCUMENT ID TECN COMMENT

$< 8.3 \times 10^{-6}$	90	ABLIKIM	04	BES	$e^+ e^- \rightarrow J/\psi$
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$\Gamma(\mu^\pm \tau^\mp)/\Gamma_{\text{total}}$ Γ_{300}/Γ
VALUE CL% DOCUMENT ID TECN COMMENT

$< 2.0 \times 10^{-6}$	90	ABLIKIM	04	BES	$e^+ e^- \rightarrow J/\psi$
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———— OTHER DECAYS ————

$\Gamma(\text{invisible})/\Gamma(e^+ e^-)$ Γ_{301}/Γ_5
VALUE CL% DOCUMENT ID TECN COMMENT

$< 6.6 \times 10^{-2}$	90	LEES	13I	BABR	$B \rightarrow K^{(*)} J/\psi$
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$\Gamma(\text{invisible})/\Gamma(\mu^+ \mu^-)$ Γ_{301}/Γ_7
VALUE CL% DOCUMENT ID TECN COMMENT

$< 1.2 \times 10^{-2}$	90	ABLIKIM	08G	BES2	$\psi(2S) \rightarrow \pi^+ \pi^- J/\psi$
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$J/\psi(1S)$ REFERENCES

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LU	19	PR D99 032003	P.-C. Lu <i>et al.</i>	(BELLE Collab.)
ABLIKIM	18AA	PR D98 072003	M. Ablikim <i>et al.</i>	(BES III Collab.)
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ABLIKIM	18D	PRL 121 022001	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	18I	PR D97 051101	M. Ablikim <i>et al.</i>	(BES III Collab.)
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ANASHIN	18A	JHEP 1805 119	V.V. Anashin <i>et al.</i>	(KEDR Collab.)
LEES	18	PR D97 052007	J.P. Lees <i>et al.</i>	(BABAR Collab.)
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ABLIKIM	17AF	PR D96 111101	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	17AH	PR D96 112001	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	17AK	PR D96 112012	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	17E	PL B770 217	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	17L	PR D95 052003	M. Ablikim <i>et al.</i>	(BES III Collab.)
LEES	17A	PR D95 052001	J.P. Lees <i>et al.</i>	(BABAR Collab.)
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ABLIKIM	16K	PR D93 052010	M. Ablikim <i>et al.</i>	(BES III Collab.)
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ABLIKIM	16N	PR D93 112011	M. Ablikim	(BES III Collab.)
ABLIKIM	16P	PR D94 072005	M. Ablikim <i>et al.</i>	(BES III Collab.)
ABLIKIM	16Q	PL B761 98	M. Ablikim <i>et al.</i>	(BES III Collab.)
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ABLIKIM	06E	PR D73 052008	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06F	PR D73 052007	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06H	PR D73 112007	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06J	PRL 96 162002	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06K	PRL 97 062001	M. Ablikim <i>et al.</i>	(BES II Collab.)
ABLIKIM	06M	PL B639 418	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06V	PL B642 441	M. Ablikim <i>et al.</i>	(BES Collab.)
ADAMS	06A	PR D73 051103	G.S. Adams <i>et al.</i>	(CLEO Collab.)
AUBERT	06B	PR D73 012005	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT	06D	PR D73 052003	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT	06E	PRL 96 052002	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT,BE	06D	PR D74 091103	B. Aubert <i>et al.</i>	(BABAR Collab.)
WU	06	PRL 97 162003	C.-H. Wu <i>et al.</i>	(BELLE Collab.)
ABLIKIM	05	PL B607 243	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05B	PR D71 032003	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05C	PL B610 192	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05H	PR D72 012002	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05R	PRL 95 262001	M. Ablikim <i>et al.</i>	(BES Collab.)
AUBERT	05D	PR D71 052001	B. Aubert <i>et al.</i>	(BABAR Collab.)
LI	05C	PR D71 111103	Z. Li <i>et al.</i>	(CLEO Collab.)
SIBIRTSEV	05A	PR D71 054010	A. Sibirtsev, J. Haidenbauer	
ABLIKIM	04	PL B598 172	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	04M	PR D70 112008	M. Ablikim <i>et al.</i>	(BES Collab.)
AUBERT	04	PR D69 011103	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT,B	04N	PR D70 072004	B. Aubert <i>et al.</i>	(BABAR Collab.)
BAI	04	PL B578 16	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	04A	PR D69 012003	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	04D	PL B589 7	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	04E	PL B591 42	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	04G	PR D70 012004	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	04H	PR D70 012005	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	04J	PL B594 47	J.Z. Bai <i>et al.</i>	(BES Collab.)
SETH	04	PR D69 097503	K.K. Seth	
AULCHENKO	03	PL B573 63	V.M. Aulchenko <i>et al.</i>	(KEDR Collab.)
BAI	03D	PL B561 49	J.Z. Bai <i>et al.</i>	(BES Collab.)

BAI	03F	PRL 91 022001	J.Z. Bai <i>et al.</i>	(BES II Collab.)
BAI	03G	PR D68 052003	J.Z. Bai <i>et al.</i>	(BES Collab.)
HUANG	03	PRL 91 241802	H.-C. Huang <i>et al.</i>	(BELLE Collab.)
BAI	02C	PRL 88 101802	J.Z. Bai <i>et al.</i>	(BES Collab.)
ARTAMONOV	00	PL B474 427	A.S. Artamonov <i>et al.</i>	
BAI	00	PRL 84 594	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	00B	PL B472 200	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	00D	PL B476 25	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	99	PL B446 356	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	99C	PRL 83 1918	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	98D	PR D58 092006	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	98G	PL B424 213	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	98H	PRL 81 1179	J.Z. Bai <i>et al.</i>	(BES Collab.)
BALDINI	98	PL B444 111	R. Baldini <i>et al.</i>	(FENICE Collab.)
ARMSTRONG	96	PR D54 7067	T.A. Armstrong <i>et al.</i>	(E760 Collab.)
BAI	96B	PRL 76 3502	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	96C	PRL 77 3959	J.Z. Bai <i>et al.</i>	(BES Collab.)
BAI	96D	PR D54 1221	J.Z. Bai <i>et al.</i>	(BES Collab.)
GRIBUSHIN	96	PR D53 4723	A. Gribushin <i>et al.</i>	(E672 Collab., E706 Collab.)
HASAN	96	PL B388 376	A. Hasan, D.V. Bugg	(BRUN, LOQM)
BAI	95B	PL B355 374	J.Z. Bai <i>et al.</i>	(BES Collab.)
BUGG	95	PL B353 378	D.V. Bugg <i>et al.</i>	(LOQM, PNPI, WASH)
ANTONELLI	93	PL B301 317	A. Antonelli <i>et al.</i>	(FENICE Collab.)
ARMSTRONG	93B	PR D47 772	T.A. Armstrong <i>et al.</i>	(FNAL E760 Collab.)
BARNES	93	PL B309 469	P.D. Barnes <i>et al.</i>	(PS185 Collab.)
AUGUSTIN	92	PR D46 1951	J.E. Augustin, G. Cosme	(DM2 Collab.)
BOLTON	92	PL B278 495	T. Bolton <i>et al.</i>	(Mark III Collab.)
BOLTON	92B	PRL 69 1328	T. Bolton <i>et al.</i>	(Mark III Collab.)
COFFMAN	92	PRL 68 282	D.M. Coffman <i>et al.</i>	(Mark III Collab.)
HSUEH	92	PR D45 2181	S. Hsueh, S. Palestini	(FNAL, TORI)
BISELLO	91	NP B350 1	D. Bisello <i>et al.</i>	(DM2 Collab.)
AUGUSTIN	90	PR D42 10	J.E. Augustin <i>et al.</i>	(DM2 Collab.)
BAI	90B	PRL 65 1309	Z. Bai <i>et al.</i>	(Mark III Collab.)
BAI	90C	PRL 65 2507	Z. Bai <i>et al.</i>	(Mark III Collab.)
BISELLO	90	PL B241 617	D. Bisello <i>et al.</i>	(DM2 Collab.)
COFFMAN	90	PR D41 1410	D.M. Coffman <i>et al.</i>	(Mark III Collab.)
JOUSSET	90	PR D41 1389	J. Jousset <i>et al.</i>	(DM2 Collab.)
ALEXANDER	89	NP B320 45	J.P. Alexander <i>et al.</i>	(LBL, MICH, SLAC)
AUGUSTIN	89	NP B320 1	J.E. Augustin, G. Cosme	(DM2 Collab.)
BISELLO	89B	PR D39 701	G. Busetto <i>et al.</i>	(DM2 Collab.)
AUGUSTIN	88	PRL 60 2238	J.E. Augustin <i>et al.</i>	(DM2 Collab.)
COFFMAN	88	PR D38 2695	D.M. Coffman <i>et al.</i>	(Mark III Collab.)
FALVARD	88	PR D38 2706	A. Falvard <i>et al.</i>	(CLER, FRAS, LALO+)
AUGUSTIN	87	ZPHY C36 369	J.E. Augustin <i>et al.</i>	(LALO, CLER, FRAS+)
BAGLIN	87	NP B286 592	C. Baglin <i>et al.</i>	(LAPP, CERN, GENO, LYON+)
BALTRUSAITIS...	87	PR D35 2077	R.M. Baltrusaitis <i>et al.</i>	(Mark III Collab.)
BECKER	87	PRL 59 186	J.J. Becker <i>et al.</i>	(Mark III Collab.)
BISELLO	87	PL B192 239	D. Bisello <i>et al.</i>	(PADO, CLER, FRAS+)
COHEN	87	RMP 59 1121	E.R. Cohen, B.N. Taylor	(RISC, NBS)
HENRARD	87	NP B292 670	P. Henrard <i>et al.</i>	(CLER, FRAS, LALO+)
PALLIN	87	NP B292 653	D. Pallin <i>et al.</i>	(CLER, FRAS, LALO, PADO)
BALTRUSAITIS...	86	PR D33 629	R.M. Baltrusaitis <i>et al.</i>	(Mark III Collab.)
BALTRUSAITIS...	86B	PR D33 1222	R.M. Baltrusaitis <i>et al.</i>	(Mark III Collab.)
BALTRUSAITIS...	86D	PRL 56 107	R.M. Baltrusaitis	(CIT, UCSC, ILL, SLAC+)
BISELLO	86B	PL B179 294	D. Bisello <i>et al.</i>	(DM2 Collab.)
GAISER	86	PR D34 711	J. Gaiser <i>et al.</i>	(Crystal Ball Collab.)
BALTRUSAITIS...	85C	PRL 55 1723	R.M. Baltrusaitis <i>et al.</i>	(CIT, UCSC+)
BALTRUSAITIS...	85D	PR D32 566	R.M. Baltrusaitis <i>et al.</i>	(CIT, UCSC+)
KURAEV	85	SJNP 41 466	E.A. Kuraev, V.S. Fadin	(NOVO)
BALTRUSAITIS...	84	PRL 52 2126	R.M. Baltrusaitis <i>et al.</i>	(CIT, UCSC+)
EATON	84	PR D29 804	M.W. Eaton <i>et al.</i>	(LBL, SLAC)
BLOOM	83	ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)
EDWARDS	83B	PRL 51 859	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
FRANKLIN	83	PRL 51 963	M.E.B. Franklin <i>et al.</i>	(LBL, SLAC)
BURKE	82	PRL 49 632	D.L. Burke <i>et al.</i>	(LBL, SLAC)
EDWARDS	82B	PR D25 3065	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
EDWARDS	82D	PRL 48 458	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
Also		ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)
EDWARDS	82E	PRL 49 259	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
LEMOIGNE	82	PL 113B 509	Y. Lemoigne <i>et al.</i>	(SACL, LOIC, SHMP+)

BESCH	81	ZPHY C8 1	H.J. Besch <i>et al.</i>	(BONN, DESY, MANZ)
GIDAL	81	PL 107B 153	G. Gidal <i>et al.</i>	(SLAC, LBL)
PARTRIDGE	80	PRL 44 712	R. Partridge <i>et al.</i>	(CIT, HARV, PRIN+)
SCHARRE	80	PL 97B 329	D.L. Scharre <i>et al.</i>	(SLAC, LBL)
ZHOLENTZ	80	PL 96B 214	A.A. Zholents <i>et al.</i>	(NOVO)
Also		SJNP 34 814	A.A. Zholents <i>et al.</i>	(NOVO)
		Translated from YAF 34 1471.		
BRANDELIK	79C	ZPHY C1 233	R. Brandelik <i>et al.</i>	(DASP Collab.)
ALEXANDER	78	PL 72B 493	G. Alexander <i>et al.</i>	(DESY, HAMB, SIEG+)
BESCH	78	PL 78B 347	H.J. Besch <i>et al.</i>	(BONN, DESY, MANZ)
BRANDELIK	78B	PL 74B 292	R. Brandelik <i>et al.</i>	(DASP Collab.)
PERUZZI	78	PR D17 2901	I. Peruzzi <i>et al.</i>	(SLAC, LBL)
BARTEL	77	PL 66B 489	W. Bartel <i>et al.</i>	(DESY, HEIDP)
BURMESTER	77D	PL 72B 135	J. Burmester <i>et al.</i>	(DESY, HAMB, SIEG+)
FELDMAN	77	PRPL 33C 285	G.J. Feldman, M.L. Perl	(LBL, SLAC)
VANNUCCI	77	PR D15 1814	F. Vannucci <i>et al.</i>	(SLAC, LBL)
BARTEL	76	PL 64B 483	W. Bartel <i>et al.</i>	(DESY, HEIDP)
BRAUNSCH...	76	PL 63B 487	W. Braunschweig <i>et al.</i>	(DASP Collab.)
JEAN-MARIE	76	PRL 36 291	B. Jean-Marie <i>et al.</i>	(SLAC, LBL) IG
BALDINI-...	75	PL 58B 471	R. Baldini-Celio <i>et al.</i>	(FRAS, ROMA)
BOYARSKI	75	PRL 34 1357	A.M. Boyarski <i>et al.</i>	(SLAC, LBL) JPC
DASP	75	PL 56B 491	W. Braunschweig <i>et al.</i>	(DASP Collab.)
ESPOSITO	75B	LNC 14 73	B. Esposito <i>et al.</i>	(FRAS, NAPL, PADO+)
FORD	75	PRL 34 604	R.L. Ford <i>et al.</i>	(SLAC, PENN)
