Meson Full Listings

$J/\psi(1S) = J/\psi(3097)$

$\Gamma(\gamma\pi^+\pi^-2\pi^0)/\Gamma_{total}$ Γ_{93}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
8.3±0.2±3.1	[26] BALTRUSAIT...86B		MRK3	$J/\psi \to 4\pi\gamma$

[26] 4π mass less than 2.0 GeV.

$\Gamma(\gamma\eta\pi\pi)/\Gamma_{total}$ Γ_{94}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
6.1 ±1.0 OUR AVERAGE				
5.85±0.3±1.05	[27] EDWARDS	83B	CBAL	$J/\psi \to \eta\pi^+\pi^-$
7.8 ±1.2±2.4	[27] EDWARDS	83B	CBAL	$J/\psi \to \eta 2\pi^0$

[27] Broad enhancement at 1700 MeV.

$\Gamma(\gamma\eta(1440) \to \gamma K\overline{K}\pi)/\Gamma_{total}$ Γ_{95}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.91±0.18 OUR AVERAGE				
0.83±0.13±0.18	[28,29] AUGUSTIN	92	DM2	$J/\psi \to \gamma K\overline{K}\pi$
$1.03^{+0.21}_{-0.18}{}^{+0.26}_{-0.19}$	[28,30] BAI	90C	MRK3	$J/\psi \to \gamma K^0_S K^\pm\pi^\mp$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.78±0.21±0.33	[28,31] AUGUSTIN	92	DM2	$J/\psi \to \gamma K\overline{K}\pi$
3.8 ±0.3 ±0.6	[28] AUGUSTIN	90	DM2	$J/\psi \to \gamma K\overline{K}\pi$
$0.66^{+0.17}_{-0.16}{}^{+0.24}_{-0.15}$	[28,32] BAI	90C	MRK3	$J/\psi \to \gamma K^0_S K^\pm\pi^\mp$
6.3 ±1.4	[28] WISNIEWSKI	87	MRK3	$J/\psi \to K\overline{K}\pi\gamma$
4.0 ±0.7 ±1.0	[28] EDWARDS	82E	CBAL	$J/\psi \to K^+K^-\pi^0\gamma$
4.3 ±1.7	[28,33] SCHARRE	80	MRK2	e^+e^-

[28] Includes unknown branching fraction $\eta(1440) \to K\overline{K}\pi$.
[29] From fit to the $K^*(892)K$ 0^{-+} partial wave.
[30] From $K^*(890)K$ final state.
[31] From fit to the $a_0(980)\pi$ 0^{-+} partial wave.
[32] From $a_0(980)\pi$ final state.
[33] Corrected for spin-zero hypothesis for $\eta(1440)$.

$\Gamma(\gamma\eta(1440) \to \gamma\gamma\rho^0)/\Gamma_{total}$ Γ_{96}/Γ

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
6.4±1.2±0.7	[34] COFFMAN	90	MRK3	$J/\psi \to \gamma\gamma\pi^+\pi^-$

[34] Includes unknown branching fraction $\eta(1440) \to \gamma\rho^0$.

$\Gamma(\gamma\rho\rho)/\Gamma_{total}$ Γ_{97}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
4.5 ±0.8 OUR AVERAGE					
4.7 ±0.3 ±0.9		[35] BALTRUSAIT...86B		MRK3	$J/\psi \to 4\pi\gamma$
3.75±1.05±1.20		[36] BURKE	82	MRK2	$J/\psi \to 4\pi\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.09	90	[37] BISELLO	89B		$J/\psi \to 4\pi\gamma$

[35] 4π mass less than 2.0 GeV.
[36] 4π mass less than 2.0 GeV, $2\rho^0$ corrected to 2ρ by factor of 3.
[37] 4π mass in the range 2.0–25 GeV.

$\Gamma(\gamma\eta'(958))/\Gamma_{total}$ Γ_{98}/Γ

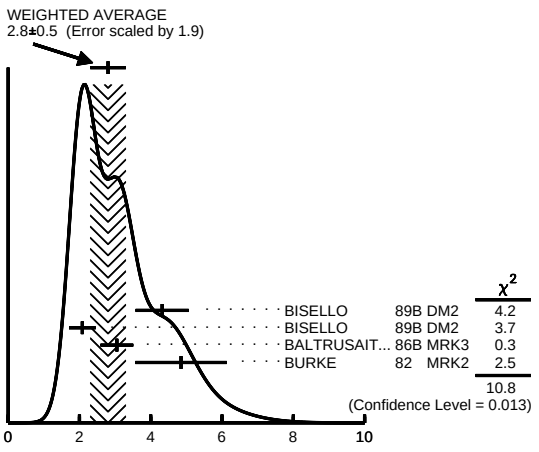
VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.31±0.30 OUR AVERAGE					
4.50±0.14±0.53		BOLTON	92B	MRK3	$J/\psi \to \gamma\pi^+\pi^-\eta,\ \eta \to \gamma\gamma$
4.30±0.31±0.71		BOLTON	92B	MRK3	$J/\psi \to \gamma\pi^+\pi^-\eta,\ \eta \to \pi^+\pi^-\pi^0$
4.04±0.16±0.85	622	AUGUSTIN	90	DM2	$J/\psi \to \gamma\eta\pi^+\pi^-$
4.39±0.09±0.66	2420	AUGUSTIN	90	DM2	$J/\psi \to \gamma\gamma\pi^+\pi^-$
4.1 ±0.3 ±0.6		BLOOM	83	CBAL	$e^+e^- \to 3\gamma +$ hadronsγ
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.9 ±1.1	6	BRANDELIK	79C	DASP	$e^+e^- \to 3\gamma$
3.8 ±1.3		[38] SCHARRE	79B	MRK1	$e^+e^- \to \gamma X$
3.4 ±0.7		SCHARRE	79B	MRK1	$e^+e^- \to 2\pi\,2\gamma$
2.4 ±0.7	57	BARTEL	76	CNTR	$e^+e^- \to 2\gamma\rho$

[38] From the inclusive γ decay spectrum.

$\Gamma(\gamma 2\pi^+2\pi^-)/\Gamma_{total}$ Γ_{99}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.8 ±0.5 OUR AVERAGE Error includes scale factor of 1.9. See the ideogram below.				
4.32±0.14±0.73	[39] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$
2.08±0.13±0.35	[40] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$
3.05±0.08±0.45	[40] BALTRUSAIT...86B		MRK3	$J/\psi \to 4\pi\gamma$
4.85±0.45±1.20	[41] BURKE	82	MRK2	e^+e^-

[39] 4π mass less than 3.0 GeV.
[40] 4π mass less than 2.0 GeV.
[41] 4π mass less than 2.5 GeV.



$\Gamma(\gamma f_4(2050))/\Gamma_{total}$ Γ_{100}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.7±0.5±0.5	[42] BALTRUSAIT...87		MRK3	$J/\psi \to \gamma\pi^+\pi^-$

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

$\Gamma(\gamma\omega\omega)/\Gamma_{total}$ Γ_{101}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.59±0.33 OUR AVERAGE					
1.41±0.2 ±0.42	120±17	BISELLO	87	SPEC	e^+e^-, hadronsγ
1.76±0.09±0.45		BALTRUSAIT...85C		MRK3	$e^+e^- \to$ hadronsγ

$\Gamma(\gamma\eta(1440) \to \gamma\rho^0\rho^0)/\Gamma_{total}$ Γ_{102}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
1.36±0.38	[43,44] BISELLO	89B	DM2	$J/\psi \to 4\pi\gamma$

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

$\Gamma(\gamma f_2(1270))/\Gamma_{total}$ Γ_{103}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1.38±0.14 OUR AVERAGE						
1.33±0.05±0.20		[45] AUGUSTIN	87	DM2		$J/\psi \to \gamma\pi^+\pi^-$
1.36±0.09±0.23		[45] BALTRUSAIT...87		MRK3		$J/\psi \to \gamma\pi^+\pi^-$
1.48±0.25±0.30	178	EDWARDS	82B	CBAL		$e^+e^- \to 2\pi^0\gamma$
2.0 ±0.7	35	ALEXANDER	78	PLUT	0	e^+e^-
1.2 ±0.6	30	[46] BRANDELIK	78B	DASP		$e^+e^- \to \pi^+\pi^-\gamma$

[45] Estimated using B($f_2(1270) \to \pi\pi$)=0.843 ± 0.012. The errors do not contain the uncertainty in the $f_2(1270)$ decay.
[46] Restated by us to take account of spread of E1, M2, E3 transitions.

$\Gamma(\gamma f_J(1710) \to \gamma K\overline{K})/\Gamma_{total}$ Γ_{104}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
9.7±1.2 OUR AVERAGE					
9.2±1.4±1.4		[47] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+K^-$
10.4±1.2±1.6		[47] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^0_S K^0_S$
9.6±1.2±1.8		[47] BALTRUSAIT...87		MRK3	$J/\psi \to \gamma K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.8	90	[48] BISELLO	89B		$J/\psi \to 4\pi\gamma$
1.6±0.4±0.3		[49] BALTRUSAIT...87		MRK3	$J/\psi \to \gamma\pi^+\pi^-$
3.8±1.6		[50] EDWARDS	82D	CBAL	$e^+e^- \to \eta\eta\gamma$

[47] Includes unknown branching fraction to K^+K^- or $K^0_S K^0_S$. We have multiplied K^+K^- measurement by 2, and $K^0_S K^0_S$ by 4 to obtain $K\overline{K}$ result.
[48] Includes unknown branching fraction to $\rho^0\rho^0$.
[49] Includes unknown branching fraction to $\pi^+\pi^-$.
[50] Includes unknown branching fraction to $\eta\eta$.

$\Gamma(\gamma\eta)/\Gamma_{total}$ Γ_{105}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.86±0.08 OUR AVERAGE					
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^-