Meson Full Listings

$\omega(782)$

$\omega(782)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Confidence level
Γ_1	$\pi^+\pi^-\pi^0$	(88.8 ±0.7) %	
Γ_2	$\pi^0\gamma$	(8.5 ±0.5) %	
Γ_3	$\pi^+\pi^-$	(2.21±0.30) %	
Γ_4	neutrals (excluding $\pi^0\gamma$)	$(\ 5.3\ ^{+8.7}_{-3.5}\ )\times10^{-3}$	
Γ_5	$\eta\gamma$	(8.3 ±2.1) $\times10^{-4}$	
Γ_6	$\pi^0 e^+ e^-$	(5.9 ±1.9) $\times10^{-4}$	
Γ_7	$\pi^0\mu^+\mu^-$	(9.6 ±2.3) $\times10^{-5}$	
Γ_8	e^+e^-	(7.15±0.19) $\times10^{-5}$	
Γ_9	$\pi^+\pi^-\pi^0\pi^0$	< 2 %	90%
Γ_{10}	$\pi^+\pi^-\gamma$	< 3.6 $\times10^{-3}$	95%
Γ_{11}	$\pi^+\pi^-\pi^+\pi^-$	< 1 $\times10^{-3}$	90%
Γ_{12}	$\pi^0\pi^0\gamma$	< 4 $\times10^{-4}$	90%
Γ_{13}	$\mu^+\mu^-$	< 1.8 $\times10^{-4}$	90%
Γ_{14}	$\eta\pi^0$		

CONSTRAINED FIT INFORMATION

An overall fit to 6 branching ratios uses 20 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 = 10.3$ for 17 degrees of freedom.

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

x_2	13		
x_3	−39	−5	
x_4	−74	−68	−1
	x_1	x_2	x_3

$\omega(782)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_8

VALUE (keV)	DOCUMENT ID
0.60±0.02 OUR EVALUATION	

$\omega(782)$ BRANCHING RATIOS

$\Gamma(\text{neutrals})/\Gamma(\pi^+\pi^-\pi^0)$ $(\Gamma_2+\Gamma_4)/\Gamma_1$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.102±0.008 OUR FIT					
$0.103^{+0.011}_{-0.010}$ OUR AVERAGE					
0.15 ±0.04	46	AGUILAR-...	72B	HBC	3.9,4.6 K^-p
0.10 ±0.03	19	BARASH	67B	HBC	0.0 $\bar{p}p$
0.134±0.026	850	DIGIUGNO	66B	CNTR	1.4 π^-p
0.097±0.016	348	FLATTE	66	HBC	1.4 – 1.7 $K^-p\to\Lambda$MM
$0.06\ ^{+0.05}_{-0.02}$		JAMES	66	HBC	2.1 π^+p
0.08 ±0.03	35	KRAEMER	64	DBC	1.2 π^+d
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.11 ±0.02	20	BUSCHBECK	63	HBC	1.5 K^-p

$\Gamma(\pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_3/Γ_1

See also $\Gamma(\pi^+\pi^-)/\Gamma_{total}$.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0249±0.0035 OUR FIT				
0.026 ±0.005 OUR AVERAGE				
$0.021\ ^{+0.028}_{-0.009}$	[6] RATCLIFF	72	ASPK	15 $\pi^-p\to n2\pi$
0.028 ±0.006	BEHREND	71	ASPK	Photoproduction
$0.022\ ^{+0.009}_{-0.01}$	[7] ROOS	70	RVUE	

[6] Significant interference effect observed. NB of $\omega\to 3\pi$ comes from an extrapolation.
[7] ROOS 70 combines ABRAMOVICH 70 and BIZZARRI 70.

$\Gamma(\pi^0\gamma)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_2/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.096±0.006 OUR FIT				
0.096±0.006 OUR AVERAGE				
0.099±0.007	DOLINSKY	89	ND	$e^+e^-\to\pi^0\gamma$
0.084±0.013	KEYNE	76	CNTR	$\pi^-p\to\omega n$
0.109±0.025	BENAKSAS	72C	OSPK	e^+e^-
0.081±0.020	BALDIN	71	HLBC	2.9 π^+p
0.13 ±0.04	JACQUET	69B	HLBC	

$\Gamma(\pi^+\pi^-\gamma)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{10}/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.066	90	KALBFLEISCH	75	HBC	2.18 $K^-p\to\Lambda\pi^+\pi^-\gamma$
<0.05	90	FLATTE	66	HBC	1.2 – 1.7 $K^-p\to\Lambda\pi^+\pi^-\gamma$

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0036	95	WEIDENAUER	90	ASTE	$p\bar{p}\to\pi^+\pi^-\pi^+\pi^-\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.004	95	BITYUKOV	88B	SPEC	32 $\pi^-p\to\pi^+\pi^-\gamma$X

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1 × 10^{-3}	90	KURDADZE	88	OLYA	$e^+e^-\to\pi^+\pi^-\pi^+\pi^-$

$\Gamma(\pi^+\pi^-\pi^0\pi^0)/\Gamma_{total}$ Γ_9/Γ

VALUE (units 10^{-2})	CL%	DOCUMENT ID		TECN	COMMENT
<2	90	KURDADZE	86	OLYA	$e^+e^-\to\pi^+\pi^-\pi^0\pi^0$

$\Gamma(\mu^+\mu^-)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{13}/Γ_1

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.2	90	WILSON	69	OSPK	12 π^-C → Fe
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.7	74	FLATTE	66	HBC	1.2 – 1.7 $K^-p\to\Lambda\mu^+\mu^-$
<1.2		BARBARO-...	65	HBC	2.7 K^-p

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\pi^0\gamma)$ Γ_{12}/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.005	90	DOLINSKY	89	ND	$e^+e^-\to\pi^0\pi^0\gamma$
<0.18	95	KEYNE	76	CNTR	$\pi^-p\to\omega n$
<0.15	90	BENAKSAS	72C	OSPK	e^+e^-
<0.14		BALDIN	71	HLBC	2.9 π^+p
<0.1	90	BARMIN	64	HLBC	1.3–2.8 π^-p

$[\Gamma(\eta\gamma)+\Gamma(\eta\pi^0)]/\Gamma(\pi^+\pi^-\pi^0)$ $(\Gamma_5+\Gamma_{14})/\Gamma_1$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.016	90	[8] FLATTE	66	HBC	1.2 – 1.7 $K^-p\to\Lambda\pi^+\pi^-$MM
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.045	95	JACQUET	69B	HLBC	

[8] Restated by us using BR($\eta\to$ *chargedmodes*)=(29.2)%.

$\Gamma(\text{neutrals})/\Gamma(\text{charged particles})$ $(\Gamma_2+\Gamma_4)/(\Gamma_1+\Gamma_3)$

VALUE	DOCUMENT ID		TECN	COMMENT
0.099±0.008 OUR FIT				
0.124±0.021	FELDMAN	67C	OSPK	1.2 π^-p

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{12}/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00045	90	DOLINSKY	89	ND	$e^+e^-\to\pi^0\pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.08	95	JACQUET	69B	HLBC	

$\Gamma(\eta\gamma)/\Gamma(\pi^0\gamma)$ Γ_5/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
0.0098±0.0024	ALDE	94	GAM2	38$\pi^-p\to\omega n$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0082±0.0033	[9] DOLINSKY	89	ND	$e^+e^-\to\eta\gamma$
0.039 ±0.007	[10] DOLINSKY	89	ND	e^+e^-
0.010 ±0.045	APEL	72B	OSPK	4–8 $\pi^-p\to n3\gamma$

[9] Solution corresponding to constructive ω-ρ interference. The quark model predicts a relative decay phase of zero.
[10] Solution corresponding to destructive ρ-ω interference.

$\Gamma(\pi^0\mu^+\mu^-)/\Gamma_{total}$ Γ_7/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
0.96±0.23	DZHELYADIN	81B	CNTR	25–33 $\pi^-p\to\omega n$

$\Gamma(\pi^0e^+e^-)/\Gamma_{total}$ Γ_6/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
5.9±1.9	43	DOLINSKY	88	ND	$e^+e^-\to\pi^0e^+e^-$