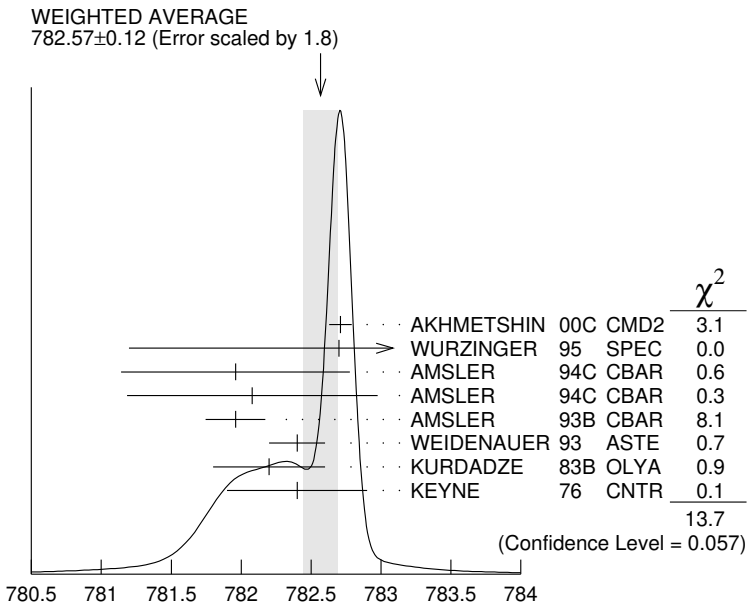
$\omega(782)$

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

$\omega(782)$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
782.57±0.12 OUR AVERAGE		Error includes scale factor of 1.8. See the ideogram below.			
782.71±0.07±0.04	11200	AKHMETSHIN	00C	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$
782.7 ±0.1 ±1.5	19500	WURZINGER	95	SPEC	1.33 $pd \to {}^3\mathrm{He}\omega$
781.96±0.17±0.80	11k	[1] AMSLER	94C	CBAR	0.0 $\overline{p}p \to \omega\eta\pi^0$
782.08±0.36±0.82	3463	[2] AMSLER	94C	CBAR	0.0 $\overline{p}p \to \omega\eta\pi^0$
781.96±0.13±0.17	15k	AMSLER	93B	CBAR	0.0 $\overline{p}p \to \omega\pi^0\pi^0$
782.4 ±0.2	270k	WEIDENAUER	93	ASTE	$\overline{p}p \to 2\pi^+2\pi^-\pi^0$
782.2 ±0.4	1488	KURDADZE	83B	OLYA	$e^+e^- \to \pi^+\pi^-\pi^0$
782.4 ±0.5	7000	[3] KEYNE	76	CNTR	$\pi^- p \to \omega n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
781.78±0.10		[4] BARKOV	87	CMD	$e^+e^- \to \pi^+\pi^-\pi^0$
783.3 ±0.4	433	CORDIER	80	DM1	$e^+e^- \to \pi^+\pi^-\pi^0$
782.5 ±0.8	33260	ROOS	80	RVUE	0.0–3.6 $\overline{p}p$
782.6 ±0.8	3000	BENKHEIRI	79	OMEG	9–12 $\pi^\pm p$
781.8 ±0.6	1430	COOPER	78B	HBC	0.7–0.8 $\overline{p}p \to 5\pi$
782.7 ±0.9	535	VANAPEL...	78	HBC	7.2 $\overline{p}p \to \overline{p}p\omega$
783.5 ±0.8	2100	GESSAROLI	77	HBC	11 $\pi^- p \to \omega n$
782.5 ±0.8	418	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p$
783.4 ±1.0	248	BIZZARRI	71	HBC	0.0 $p\overline{p} \to K^+K^-\omega$
781.0 ±0.6	510	BIZZARRI	71	HBC	0.0 $p\overline{p} \to K_1K_1\omega$
783.7 ±1.0	3583	[5] COYNE	71	HBC	3.7 $\pi^+ p \to p\pi^+\pi^+\pi^-\pi^0$
784.1 ±1.2	750	ABRAMOVI...	70	HBC	3.9 $\pi^- p$
783.2 ±1.6		[6] BIGGS	70B	CNTR	$<4.1\ \gamma\mathrm{C} \to \pi^+\pi^-\mathrm{C}$
782.4 ±0.5	2400	BIZZARRI	69	HBC	0.0 $\overline{p}p$

[1] From the $\eta \to \gamma\gamma$ decay.
[2] From the $\eta \to 3\pi^0$ decay.
[3] Observed by threshold-crossing technique. Mass resolution = 4.8 MeV FWHM.
[4] Systematic uncertainties underestimated.
[5] From best-resolution sample of COYNE 71.
[6] From ω-ρ interference in the $\pi^+\pi^-$ mass spectrum assuming ω width 12.6 MeV.



$\omega(782)$ mass (MeV)

$\omega(782)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
8.44±0.09 OUR AVERAGE					
8.68±0.23±0.10	11200	AKHMETSHIN	00C	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$
8.2 ±0.3	19500	WURZINGER	95	SPEC	1.33 $p\,d \to {}^3\mathrm{He}\,\omega$
8.4 ±0.1	[7]	AULCHENKO	87	ND	$e^+e^- \to \pi^+\pi^-\pi^0$
8.30±0.40		BARKOV	87	CMD	$e^+e^- \to \pi^+\pi^-\pi^0$
9.8 ±0.9	1488	KURDADZE	83B	OLYA	$e^+e^- \to \pi^+\pi^-\pi^0$
9.0 ±0.8	433	CORDIER	80	DM1	$e^+e^- \to \pi^+\pi^-\pi^0$
9.1 ±0.8	451	BENAKSAS	72B	OSPK	$e^+e^- \to \pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
12 ±2	1430	COOPER	78B	HBC	0.7–0.8 $\overline{p}p \to 5\pi$
9.4 ±2.5	2100	GESSAROLI	77	HBC	11 $\pi^- p \to \omega n$
10.22±0.43	20000	[8] KEYNE	76	CNTR	$\pi^- p \to \omega n$
13.3 ±2	418	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p$
10.5 ±1.5		BORENSTEIN	72	HBC	2.18 $K^- p$
7.70±0.9 ±1.15	940	BROWN	72	MMS	2.5 $\pi^- p \to n\,\mathrm{MM}$
10.3 ±1.4	510	BIZZARRI	71	HBC	0.0 $p\overline{p} \to K_1 K_1 \omega$
12.8 ±3.0	248	BIZZARRI	71	HBC	0.0 $p\overline{p} \to K^+K^-\omega$
9.5 ±1.0	3583	COYNE	71	HBC	3.7 $\pi^+ p \to p\pi^+\pi^+\pi^-\pi^0$

[7] Relativistic Breit-Wigner includes radiative corrections.

[8] Observed by threshold-crossing technique. Mass resolution = 4.8 MeV FWHM.

$\omega(782)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1	$\pi^+\pi^-\pi^0$	(89.1 $\pm$0.7) %	S=1.1
Γ_2	$\pi^0\gamma$	(8.7 $\pm$0.4) %	
Γ_3	$\pi^+\pi^-$	(1.70$\pm$0.28) %	S=1.5
Γ_4	neutrals (excluding $\pi^0\gamma$)	(4.1 $^{+8.2}_{-2.8}$) $\times 10^{-3}$	
Γ_5	$\eta\gamma$	(6.5 $\pm$1.1) $\times 10^{-4}$	
Γ_6	$\pi^0 e^+ e^-$	(5.9 $\pm$1.9) $\times 10^{-4}$	
Γ_7	$\pi^0\mu^+\mu^-$	(9.6 $\pm$2.3) $\times 10^{-5}$	
Γ_8	$e^+ e^-$	(6.95$\pm$0.15) $\times 10^{-5}$	S=1.1
Γ_9	$\pi^+\pi^-\pi^0\pi^0$	$<$ 2 %	CL=90%
Γ_{10}	$\pi^+\pi^-\gamma$	$<$ 3.6 $\times 10^{-3}$	CL=95%
Γ_{11}	$\pi^+\pi^-\pi^+\pi^-$	$<$ 1 $\times 10^{-3}$	CL=90%
Γ_{12}	$\pi^0\pi^0\gamma$	(7.8 $\pm$3.4) $\times 10^{-5}$	
Γ_{13}	$\mu^+\mu^-$	(9.0 $\pm$3.1) $\times 10^{-5}$	
Γ_{14}	3γ	$<$ 1.9 $\times 10^{-4}$	CL=95%

Charge conjugation (C) violating modes

Γ_{15}	$\eta\pi^0$	C	$<$ 1 $\times 10^{-3}$		CL=90%
Γ_{16}	$3\pi^0$	C	$<$ 3 $\times 10^{-4}$		CL=90%

CONSTRAINED FIT INFORMATION

An overall fit to 9 branching ratios uses 33 measurements and one constraint to determine 7 parameters. The overall fit has a $\chi^2 =$ 25.0 for 27 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, $x_i \equiv \Gamma_i/\Gamma_{\rm total}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_2	16					
x_3	−38	−6				
x_4	−80	−63	1			
x_5	−1	0	0	0		
x_8	−37	−6	14	29	1	
x_{13}	0	0	0	0	0	0
	x_1	x_2	x_3	x_4	x_5	x_8

$\omega(782)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_8

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
0.60 ±0.02 OUR EVALUATION					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.595±0.014±0.009	11200	[9] AKHMETSHIN	00C	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$

[9] Using B($\omega \to \pi^+\pi^-\pi^0$) = 0.888 ± 0.007.

$\omega(782)$ $\Gamma(i)\Gamma(e^+e^-)/\Gamma^2(total)$

$\Gamma(e^+e^-) \times \Gamma(\pi^+\pi^-\pi^0)/\Gamma^2_{total}$ $\Gamma_8\Gamma_1/\Gamma^2$

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
6.19±0.12 OUR FIT Error includes scale factor of 1.1.					
6.19±0.12 OUR AVERAGE Error includes scale factor of 1.1.					
6.08±0.14±0.08	11200	AKHMETSHIN	00C	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$
6.37±0.35		[10] DOLINSKY	89	ND	$e^+e^- \to \pi^+\pi^-\pi^0$
6.45±0.24		[10] BARKOV	87	CMD	$e^+e^- \to \pi^+\pi^-\pi^0$
5.79±0.42	1488	[10] KURDADZE	83B	OLYA	$e^+e^- \to \pi^+\pi^-\pi^0$
5.89±0.54	433	[10] CORDIER	80	DM1	$e^+e^- \to \pi^+\pi^-\pi^0$
7.54±0.84	451	[10] BENAKSAS	72B	OSPK	$e^+e^- \to \pi^+\pi^-\pi^0$

$\Gamma(e^+e^-) \times \Gamma(\pi^0\gamma)/\Gamma^2_{total}$ $\Gamma_8\Gamma_2/\Gamma^2$

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
6.33±0.29	[10] DOLINSKY	89	ND	$e^+e^- \to \pi^0\gamma$

$\Gamma(e^+e^-) \times \Gamma(\eta\gamma)/\Gamma^2_{total}$ $\Gamma_8\Gamma_5/\Gamma^2$

VALUE (units 10^{-8})	EVTS	DOCUMENT ID		TECN	COMMENT
3.3 ±0.4 OUR AVERAGE					
3.41±0.52±0.21	23k	[11,12] AKHMETSHIN	01B	CMD2	$e^+e^- \to \eta\gamma$
3.25±0.51±0.10	312	[13] ACHASOV	00D	SND	$e^+e^- \to \eta\gamma$

[10] Recalculated by us from the cross section in the peak.
[11] From the $\eta \to 3\pi^0$ decay and using B($\eta \to 3\pi^0$)= (32.24 ± 0.29) × 10^{-2}.
[12] The combined fit from 600 to 1380 MeV taking into account $\rho(770)$, $\omega(782)$, $\phi(1020)$, and $\rho(1450)$ (mass and width fixed at 1450 MeV and 310 MeV respectively).
[13] From the $\eta \to 3\pi^0$ decay and using B($\eta \to 3\pi^0$) = (32.2 ± 0.4) × 10^{-2}.

$\omega(782)$ 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 $\overline{p}p$
0.134±0.026	850	DIGIUGNO	66B	CNTR	1.4 π^-p

0.097 ± 0.016	348	FLATTE	66	HBC	1.4 – 1.7 $K^- p \rightarrow \Lambda$MM
$0.06 \ ^{+0.05}_{-0.02}$		JAMES	66	HBC	2.1 $\pi^+ p$
0.08 ± 0.03	35	KRAEMER	64	DBC	1.2 $\pi^+ d$

• • • 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 $\Gamma(\pi^+\pi^-)/\Gamma_{\text{total}}$.

VALUE		DOCUMENT ID		TECN	COMMENT
0.0191 ± 0.0033 OUR FIT	Error includes scale factor of 1.5.				
0.026 ± 0.005 OUR AVERAGE					
$0.021 \ ^{+0.028}_{-0.009}$	[16]	RATCLIFF	72	ASPK	15 $\pi^- p \rightarrow n 2\pi$
0.028 ± 0.006		BEHREND	71	ASPK	Photoproduction
$0.022 \ ^{+0.009}_{-0.01}$	[17]	ROOS	70	RVUE	

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.097 ± 0.005 OUR FIT				
0.097 ± 0.005 OUR AVERAGE				
$0.0994 \pm 0.0036 \pm 0.0038$	[18]	AULCHENKO	00A	SND	$e^+ e^- \rightarrow \pi^+\pi^-\pi^0\pi^0, \pi^0\pi^0\gamma$
0.084 ± 0.013		KEYNE	76	CNTR	$\pi^- p \rightarrow \omega n$
0.109 ± 0.025		BENAKSAS	72C	OSPK	$e^+ e^- \rightarrow \pi^0\gamma$
0.081 ± 0.020		BALDIN	71	HLBC	2.9 $\pi^+ p$
0.13 ± 0.04		JACQUET	69B	HLBC	2.05 $\pi^+ p \rightarrow \pi^+ p\omega$

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

0.099 ± 0.007	[19]	DOLINSKY	89	ND	$e^+ e^- \rightarrow \pi^0\gamma$

$\Gamma(\pi^+\pi^-\gamma)/\Gamma(\pi^+\pi^-\pi^0)$ 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 $K^- p \rightarrow \Lambda\pi^+\pi^-\gamma$
<0.05	90	FLATTE	66	HBC	1.2 – 1.7 $K^- p \rightarrow \Lambda\pi^+\pi^-\gamma$

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

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

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

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

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

$\Gamma(\pi^0\pi^0\gamma)/\Gamma_{total}$ — Γ_{12}/Γ

VALUE (units 10^{-5})	EVTS		DOCUMENT ID		TECN	COMMENT
7.8±2.7±2.0	63	[20]	ACHASOV	00G	SND	$e^+e^- \to \pi^0\pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
12.7±2.3±2.5	63	[21]	ACHASOV	00G	SND	$e^+e^- \to \pi^0\pi^0\gamma$

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

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.00085±0.00029		40 ± 14	ALDE	94B	GAM2	$38\pi^- p \to \pi^0\pi^0\gamma n$
• • • 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 $\pi^+ p$
< 0.1	90		BARMIN	64	HLBC	1.3–2.8 $\pi^- p$

$\Gamma(\eta\pi^0)/\Gamma_{total}$ — Γ_{15}/Γ

Violates C conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.001	90	ALDE	94B	GAM2	$38\pi^- p \to \eta\pi^0 n$

$[\Gamma(\eta\gamma)+\Gamma(\eta\pi^0)]/\Gamma(\pi^+\pi^-\pi^0)$ — $(\Gamma_5+\Gamma_{15})/\Gamma_1$

VALUE	CL%		DOCUMENT ID		TECN	COMMENT
<0.016	90	[22]	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	2.05 $\pi^+ p \to \pi^+ p\omega$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.100±0.008 OUR FIT				
0.124±0.021	FELDMAN	67C	OSPK	1.2 $\pi^- p$

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\pi^+\pi^-\pi^0)$ 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	2.05 $\pi^+ p \to \pi^+ p\omega$

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

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0098±0.0024	[23] ALDE	93	GAM2	$38\pi^- p \to \omega n$
0.0082±0.0033	[24] DOLINSKY	89	ND	$e^+e^- \to \eta\gamma$
0.010 ±0.045	APEL	72B	OSPK	4–8 $\pi^- p \to n3\gamma$

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

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

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

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

$\Gamma(e^+e^-)/\Gamma_{total}$ Γ_8/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.695±0.015 OUR FIT Error includes scale factor of 1.1.					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.685±0.016	11200	[25,26] AKHMETSHIN	00C	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$
0.714±0.036		[26] DOLINSKY	89	ND	$e^+e^- \to \pi^+\pi^-\pi^0$
0.72 ±0.03		[26] BARKOV	87	CMD	$e^+e^- \to \pi^+\pi^-\pi^0$
0.64 ±0.04	1488	[26] KURDADZE	83B	OLYA	$e^+e^- \to \pi^+\pi^-\pi^0$
0.675±0.069	433	[26] CORDIER	80	DM1	$e^+e^- \to \pi^+\pi^-\pi^0$
0.83 ±0.10	451	[26] BENAKSAS	72B	OSPK	$e^+e^- \to \pi^+\pi^-\pi^0$
0.77 ±0.06		[27] AUGUSTIN	69D	OSPK	$e^+e^- \to \pi^+\pi^-\pi^0$
0.65 ±0.13	33	[28] ASTVACAT...	68	OSPK	Assume SU(3)+mixing

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

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
9.0±3.1 OUR FIT					
9.0±2.9±1.1	18	HEISTER	02C	ALEP	$Z \to \mu^+\mu^- + X$

$\Gamma(\text{neutrals})/\Gamma_{total}$ $(\Gamma_2+\Gamma_4)/\Gamma$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.091±0.006 OUR FIT					
0.081±0.011 OUR AVERAGE					
0.075±0.025		BIZZARRI	71	HBC	0.0 $p\overline{p}$
0.079±0.019		DEINET	69B	OSPK	1.5 $\pi^- p$
0.084±0.015		BOLLINI	68C	CNTR	2.1 $\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.073±0.018	42	BASILE	72B	CNTR	1.67 $\pi^- p$

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

See also $\Gamma(\pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$.

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.70±0.28 OUR FIT Error includes scale factor of 1.5.					
1.55±0.26 OUR AVERAGE Error includes scale factor of 1.2.					
1.33±0.24±0.05	114k	AKHMETSHIN	02	CMD2	$e^+e^- \to \pi^+\pi^-$
2.3 ±0.5		BARKOV	85	OLYA	$e^+e^- \to \pi^+\pi^-$
$1.6\ ^{+0.9}_{-0.7}$		QUENZER	78	DM1	$e^+e^- \to \pi^+\pi^-$
3.6 ±1.9		BENAKSAS	72	OSPK	$e^+e^- \to \pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.9 ±0.3	[29]	GARDNER	99	RVUE	$e^+e^- \to \pi^+\pi^-$
2.3 ±0.4	[30]	BENAYOUN	98	RVUE	$e^+e^- \to \pi^+\pi^-$, $\mu^+\mu^-$
1.0 ±0.11	[31]	WICKLUND	78	ASPK	3,4,6 $\pi^\pm N$
1.22±0.30		ALVENSLEB...	71C	CNTR	Photoproduction
$1.3\ ^{+1.2}_{-0.9}$		MOFFEIT	71	HBC	2.8,4.7 γp
$0.80^{+0.28}_{-0.20}$	[32]	BIGGS	70B	CNTR	4.2 γ C $\to \pi^+\pi^-$ C

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\text{neutrals})$ $\Gamma_{12}/(\Gamma_2+\Gamma_4)$

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.22±0.07		[14] DAKIN	72	OSPK	1.4 $\pi^- p \to n$MM
<0.19	90	DEINET	69B	OSPK	

[14] See $\Gamma(\pi^0\gamma)/\Gamma(\text{neutrals})$.

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

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.78±0.07		[33] DAKIN	72	OSPK	1.4 $\pi^- p \to n$MM
>0.81	90	DEINET	69B	OSPK	

$\Gamma(\eta\gamma)/\Gamma_{total}$ Γ_5/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
6.5 ±1.1 OUR FIT					
6.5 ±1.0 OUR AVERAGE					
6.6 ±1.7		[34] ABELE	97E	CBAR	0.0 $\bar{p}p \to 5\gamma$
8.3 ±2.1		ALDE	93	GAM2	38 $\pi^- p \to \omega n$
7.3 ±2.9		[35] DOLINSKY	89	ND	$e^+e^- \to \eta\gamma$
$3.0\ ^{+2.5}_{-1.8}$		[35] ANDREWS	77	CNTR	6.7–10 γCu
• • • We do not use the following data for averages, fits, limits, etc. • • •					
5.10±0.72±0.34	23k	[36] AKHMETSHIN	01B	CMD2	$e^+e^- \to \eta\gamma$
4.60±0.72±0.19	312	[37,38] ACHASOV	00D	SND	$e^+e^- \to \eta\gamma$
0.7 to 5.5		[39] CASE	00	CBAR	0.0 $p\bar{p} \to \eta\eta\gamma$
$6.56^{+2.41}_{-2.55}$	3525	[35,40] BENAYOUN	96	RVUE	$e^+e^- \to \eta\gamma$

$\Gamma(\pi^0\mu^+\mu^-)/\Gamma(\mu^+\mu^-)$ Γ_7/Γ_{13}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.2 ± 0.6	30	[41] DZHELYADIN	79	CNTR	25–33 π^-p

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_1/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.880\ \pm0.020\ \pm0.032$	11200	[26,42] AKHMETSHIN	00C	CMD2	$e^+e^-\to\pi^+\pi^-\pi^0$
0.8942 ± 0.0062		[26] DOLINSKY	89	ND	$e^+e^-\to\pi^+\pi^-\pi^0$

$\Gamma(3\pi^0)/\Gamma_{total}$ Γ_{16}/Γ

Violates C conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0003	90	PROKOSHKIN	95	GAM2	38 $\pi^-p\to3\pi^0n$

$\Gamma(3\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_{16}/Γ_1

Violates C conservation.

VALUE	CL%	DOCUMENT ID		COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.009	90	BARBERIS	01	450 $pp\to p_f3\pi^0p_s$

$\Gamma(3\gamma)/\Gamma_{total}$ Γ_{14}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.9	95	[43] ABELE	97E	CBAR	0.0 $\overline{p}p\to5\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2	90	[43] PROKOSHKIN	95	GAM2	38 $\pi^-p\to3\gamma n$

$\Gamma(\pi^0\gamma)/\Gamma_{total}$ Γ_2/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
8.39 ± 0.24	9975	[15] BENAYOUN	96	RVUE	$e^+e^-\to\pi^0\gamma$

[15] Reanalysis of DRUZHININ 84, DOLINSKY 89, DOLINSKY 91 taking into account the triangle anomaly contributions.

[16] Significant interference effect observed. NB of $\omega\to3\pi$ comes from an extrapolation.

[17] ROOS 70 combines ABRAMOVICH 70 and BIZZARRI 70.

[18] From $\sigma_0^{\omega\pi^0\to\pi^0\pi^0\gamma}(m_\phi)/\sigma_0^{\omega\pi^0\to\pi^+\pi^-\pi^0\pi^0}(m_\phi)$ with a phase-space correction factor of 1/1.023.

[19] Not independent of the corresponding $\Gamma(e^+e^-)\times\Gamma(\pi^0\gamma)/\Gamma^2_{total}$.

[20] In the model assuming the $\rho\to\pi^0\pi^0\gamma$ decay via the $\omega\pi$ and $S\gamma$ mechanisms where S is a broad scalar state.

[21] In the model assuming the $\rho\to\pi^0\pi^0\gamma$ decay via the $\omega\pi$ mechanism only.

[22] Restated by us using B($\eta\to$ charged modes) = 29.2%.

[23] Model independent determination.

[24] Solution corresponding to constructive ω-ρ interference.

[25] Using B($\omega\to\pi^+\pi^-\pi^0$)=0.888 ± 0.007.

[26] Not independent of the corresponding $\Gamma(e^+e^-)\times\Gamma(\pi^+\pi^-\pi^0)/\Gamma^2_{total}$.

[27] Rescaled by us to correspond to ω width 8.4 MeV. Systematic errors underestimated.

[28] Not resolved from ρ decay. Error statistical only.
[29] Using the data of BARKOV 85.
[30] Using the data of BARKOV 85 in the hidden local symmetry model.
[31] From a model-dependent analysis assuming complete coherence.
[32] Re-evaluated under $\Gamma(\pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ by BEHREND 71 using more accurate $\omega \to \rho$ photoproduction cross-section ratio.
[33] Error statistical only. Authors obtain good fit also assuming $\pi^0\gamma$ as the only neutral decay.
[34] No flat $\eta\eta\gamma$ background assumed.
[35] Solution corresponding to constructive ω-ρ interference.
[36] Using $B(\omega \to e^+e^-) = (7.07 \pm 0.19) \times 10^{-5}$ and using $B(\eta \to 3\pi^0) = (32.24 \pm 0.29) \times 10^{-2}$. Solution corresponding to constructive ω-ρ interference. The combined fit from 600 to 1380 MeV taking into account $\rho(770)$, $\omega(782)$, $\phi(1020)$, and $\rho(1450)$ (mass and width fixed at 1450 MeV and 310 MeV respectively). Not independent of the corresponding $\Gamma(e^+e^-) \times \Gamma(\eta\gamma)/\Gamma^2_{\rm total}$.
[37] Using $B(\omega \to e^+e^-) = (7.07 \pm 0.19) \times 10^{-5}$ and $B(\eta \to 3\pi^0) = (32.2 \pm 0.4) \times 10^{-2}$.
[38] Not independent of the corresponding $\Gamma(e^+e^-) \times \Gamma(\eta\gamma)/\Gamma^2_{\rm total}$.
[39] Depending on the degree of coherence with the flat $\eta\eta\gamma$ background and using $B(\omega \to \pi^0\gamma) = (8.5 \pm 0.5) \times 10^{-2}$.
[40] Reanalysis of DRUZHININ 84, DOLINSKY 89, DOLINSKY 91 taking into account the triangle anomaly contributions.
[41] Superseded by DZHELYADIN 81B result above.
[42] Using $\Gamma(e^+e^-) = 0.60 \pm 0.02$ keV.
[43] From direct 3γ decay search.

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