

$\omega(782)$

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

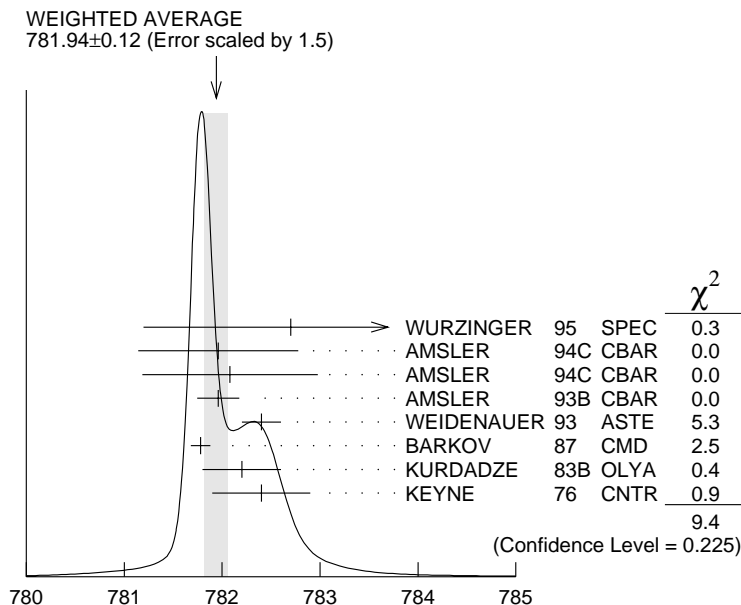
$\omega(782)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
781.94 ± 0.12 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.		
782.7 ± 0.1 ± 1.5	19500	WURZINGER 95	SPEC	1.33 $p d \rightarrow {}^3\text{He}\omega$
781.96 ± 0.17 ± 0.80	11k	AMSLER 94C	CBAR	0.0 $\bar{p} p \rightarrow \omega \pi^0 \pi^0$
782.08 ± 0.36 ± 0.82	3463	AMSLER 94C	CBAR	0.0 $\bar{p} p \rightarrow \omega \eta \pi^0$
781.96 ± 0.13 ± 0.17	15k	AMSLER 93B	CBAR	0.0 $\bar{p} p \rightarrow \omega \pi^0 \pi^0$
782.4 ± 0.2	270k	WEIDENAUER 93	ASTE	$\bar{p} p \rightarrow 2\pi^+ 2\pi^- \pi^0$
781.78 ± 0.10		BARKOV 87	CMD	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
782.2 ± 0.4	1488	KURDADZE 83B	OLYA	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
782.4 ± 0.5	7000	¹ KEYNE 76	CNTR	$\pi^- p \rightarrow \omega n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
783.3 ± 0.4		CORDIER 80	WIRE	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
782.5 ± 0.8	33260	ROOS 80	RVUE	0.0–3.6 $\bar{p} p$
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 $\bar{p} p \rightarrow 5\pi$
782.7 ± 0.9	535	VANAPEL... 78	HBC	7.2 $\bar{p} p \rightarrow \bar{p} p \omega$
783.5 ± 0.8	2100	GESSAROLI 77	HBC	11 $\pi^- p \rightarrow \omega n$
782.5 ± 0.8	418	AGUILAR-... 72B	HBC	3.9, 4.6 $K^- p$
783.4 ± 1.0	248	BIZZARRI 71	HBC	0.0 $p \bar{p} \rightarrow K^+ K^- \omega$
781.0 ± 0.6	510	BIZZARRI 71	HBC	0.0 $p \bar{p} \rightarrow K_1 K_1 \omega$
783.7 ± 1.0	3583	² COYNE 71	HBC	3.7 $\pi^+ p \rightarrow p \pi^+ \pi^+ \pi^- \pi^0$
784.1 ± 1.2	750	ABRAMOVI... 70	HBC	3.9 $\pi^- p$
783.2 ± 1.6		³ BIGGS 70B	CNTR	<4.1 $\gamma C \rightarrow \pi^+ \pi^- C$
782.4 ± 0.5	2400	BIZZARRI 69	HBC	0.0 $\bar{p} p$

¹ Observed by threshold-crossing technique. Mass resolution = 4.8 MeV FWHM.

² From best-resolution sample of COYNE 71.

³ 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
8.41±0.09 OUR AVERAGE				
8.2 ±0.3	19500	WURZINGER 95	SPEC	1.33 $pd \rightarrow {}^3\text{He}\omega$
8.4 ±0.1		⁴ AULCHENKO 87	ND	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
8.30±0.40		BARKOV 87	CMD	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
9.8 ±0.9	1488	KURDADZE 83B	OLYA	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
9.0 ±0.8		CORDIER 80	WIRE	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
9.1 ±0.8		BENAKSAS 72B	OSPK	e^+e^-
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
12 ±2	1430	COOPER 78B	HBC	0.7-0.8 $\bar{p}p \rightarrow 5\pi$
9.4 ±2.5	2100	GESSAROLI 77	HBC	11 $\pi^-p \rightarrow \omega n$
10.22±0.43	20000	⁵ KEYNE 76	CNTR	$\pi^-p \rightarrow \omega n$
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 $\pi^-p \rightarrow nMM$
10.3 ±1.4	510	BIZZARRI 71	HBC	0.0 $p\bar{p} \rightarrow K_1^+K_1^-\omega$
12.8 ±3.0	248	BIZZARRI 71	HBC	0.0 $p\bar{p} \rightarrow K^+K^-\omega$
9.5 ±1.0	3583	COYNE 71	HBC	3.7 $\pi^+p \rightarrow$ $p\pi^+\pi^+\pi^-\pi^0$

⁴ Relativistic Breit-Wigner includes radiative corrections.

⁵ 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 $\pi^+ \pi^- \pi^0$	(88.8 \pm 0.7) %	
Γ_2 $\pi^0 \gamma$	(8.5 \pm 0.5) %	
Γ_3 $\pi^+ \pi^-$	(2.21 \pm 0.30) %	
Γ_4 neutrals (excluding $\pi^0 \gamma$)	(5.3 $^{+8.7}_{-3.5}$) $\times 10^{-3}$	
Γ_5 $\eta \gamma$	(6.5 \pm 1.0) $\times 10^{-4}$	
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 $e^+ e^-$	(7.07 \pm 0.19) $\times 10^{-5}$	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} $\pi^0 \pi^0 \gamma$	(7.2 \pm 2.5) $\times 10^{-5}$	
Γ_{13} $\mu^+ \mu^-$	< 1.8 $\times 10^{-4}$	CL=90%
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 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 $\langle \delta x_i \delta x_j \rangle / (\delta x_i \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. 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 \pm 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 $\pi^- p$
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

0.0249±0.0035 OUR FIT

0.026 ±0.005 OUR AVERAGE

0.021 ^{+0.028} _{-0.009}	⁶	RATCLIFF	72 ASPK	15 $\pi^- p \rightarrow n2\pi$
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 $\omega \rightarrow 3\pi$ 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	$e^+e^- \rightarrow \pi^0\gamma$
0.084±0.013		KEYNE	76 CNTR	$\pi^- p \rightarrow \omega n$
0.109±0.025		BENAKSAS	72C OSPK	e^+e^-
0.081±0.020		BALDIN	71 HLBC	2.9 $\pi^+ p$
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 $K^- p \rightarrow \Lambda\pi^+\pi^-\gamma$
<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	$p\bar{p} \rightarrow \pi^+\pi^-\pi^+\pi^-\gamma$
● ● ● 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 × 10⁻³	90	KURDADZE 88	OLYA	$e^+e^- \rightarrow \pi^+\pi^-\pi^+\pi^-$

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

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

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

VALUE (units 10 ⁻³)	CL%	DOCUMENT ID	TECN	COMMENT
<0.2	90	WILSON 69	OSPK	$12 \pi^- C \rightarrow \text{Fe}$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
<1.7	74	FLATTE 66	HBC	$1.2 - 1.7 K^- p \rightarrow \Lambda \mu^+ \mu^-$
<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%	EVTS	DOCUMENT ID	TECN	COMMENT
0.00085 ± 0.00029		40 ± 14	ALDE	94B GAM2	$38 \pi^- p \rightarrow \pi^0\pi^0\gamma n$

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

< 0.005	90	DOLINSKY 89	ND	$e^+e^- \rightarrow \pi^0\pi^0\gamma$
< 0.18	95	KEYNE 76	CNTR	$\pi^- p \rightarrow \omega n$
< 0.15	90	BENAKSAS 72C	OSPK	e^+e^-
< 0.14		BALDIN 71	HLBC	$2.9 \pi^+ p$
< 0.1	90	BARMIN 64	HLBC	$1.3-2.8 \pi^- p$

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

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

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

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.016	90	⁸ FLATTE 66	HBC	$1.2 - 1.7 K^- p \rightarrow \Lambda \pi^+ \pi^- \text{MM}$

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

<0.045	95	JACQUET 69B	HLBC	
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⁸ Restated by us using $B(\eta \rightarrow \text{charged modes}) = 29.2\%$.

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.099±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

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.00045	90	DOLINSKY	89 ND	$e^+e^- \rightarrow \pi^0\pi^0\gamma$
• • • 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

<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. • • •			
0.0098±0.0024	⁹ ALDE	93 GAM2	$38\pi^- p \rightarrow \omega n$
0.0082±0.0033	¹⁰ DOLINSKY	89 ND	$e^+e^- \rightarrow \eta\gamma$
0.010 ±0.045	APEL	72B OSPK	$4-8 \pi^- p \rightarrow n3\gamma$

⁹ Model independent determination.

¹⁰ Solution corresponding to constructive ω - ρ interference.

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

<u>VALUE (units 10⁻⁴)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.96±0.23	DZHELYADIN	81B CNTR	$25-33 \pi^- p \rightarrow \omega n$

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

<u>VALUE (units 10⁻⁴)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
5.9±1.9	43	DOLINSKY	88 ND	$e^+e^- \rightarrow \pi^0e^+e^-$

 $\Gamma(e^+e^-)/\Gamma_{\text{total}}$
 Γ_8/Γ

<u>VALUE (units 10⁻⁴)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.707±0.019 OUR AVERAGE		Error includes scale factor of 1.1.		
0.714±0.036		DOLINSKY	89 ND	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
0.72 ±0.03		BARKOV	87 CMD	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
0.64 ±0.04	1488	KURDADZE	83B OLYA	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
0.675±0.069		CORDIER	80 WIRE	$e^+e^- \rightarrow 3\pi$
0.83 ±0.10		BENAKSAS	72B OSPK	$e^+e^- \rightarrow 3\pi$
0.77 ±0.06		¹¹ AUGUSTIN	69D OSPK	$e^+e^- \rightarrow 2\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.65 ±0.13	33	¹² ASTVACAT...	68 OSPK	Assume SU(3)+mixing

¹¹ Rescaled by us to correspond to ω width 8.4 MeV.

¹² Not resolved from ρ decay. Error statistical only.

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

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.090±0.006 OUR FIT				
0.081±0.011 OUR AVERAGE				
0.075±0.025		BIZZARRI	71 HBC	0.0 $p\bar{p}$
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 $\pi^- p$

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

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

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.0221±0.0030 OUR FIT			
0.021 ±0.004 OUR AVERAGE			
0.023 ±0.005	BARKOV	85 OLYA	$e^+ e^-$
0.016 $\begin{smallmatrix} +0.009 \\ -0.007 \end{smallmatrix}$	QUENZER	78 CNTR	$e^+ e^-$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
0.023 ±0.004	¹³ BENAYOUN	98 RVUE	$e^+ e^- \rightarrow \pi^+ \pi^-, \mu^+ \mu^-$
0.010 ±0.001	¹⁴ WICKLUND	78 ASPK	3,4,6 $\pi^\pm N$
0.0122±0.0030	ALVENSLEB...	71C CNTR	Photoproduction
0.013 $\begin{smallmatrix} +0.012 \\ -0.009 \end{smallmatrix}$	MOFFEIT	71 HBC	2.8,4.7 γp
0.0080 $\begin{smallmatrix} +0.0028 \\ -0.002 \end{smallmatrix}$	¹⁵ BIGGS	70B CNTR	4.2 $\gamma C \rightarrow \pi^+ \pi^- C$

¹³ Not independent of BARKOV 85.

¹⁴ From a model-dependent analysis assuming complete coherence.

¹⁵ Re-evaluated under $\Gamma(\pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ by BEHREND 71 using more accurate $\omega \rightarrow \rho$ photoproduction cross-section ratio.

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

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.22±0.07		¹⁶ DAKIN	72 OSPK	1.4 $\pi^- p \rightarrow nMM$
<0.19	90	DEINET	69B OSPK	
¹⁶ See $\Gamma(\pi^0 \gamma)/\Gamma(\text{neutrals})$.				

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

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.78±0.07		¹⁷ DAKIN	72 OSPK	1.4 $\pi^- p \rightarrow nMM$
>0.81	90	DEINET	69B OSPK	
¹⁷ Error statistical only. Authors obtain good fit also assuming $\pi^0 \gamma$ as the only neutral decay.				

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
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6.5 ± 1.0 OUR AVERAGE

6.6 ± 1.7		ABELE	97E CBAR	0.0 $\bar{p}p \rightarrow 5\gamma$
8.3 ± 2.1		ALDE	93 GAM2	$38\pi^- p \rightarrow \omega n$
7.3 ± 2.9		¹⁸ DOLINSKY	89 ND	$e^+e^- \rightarrow \eta\gamma$
3.0 $^{+2.5}_{-1.8}$		¹⁸ ANDREWS	77 CNTR	6.7–10 γCu

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

6.56 $^{+2.41}_{-2.55}$	3525	^{18,19} BENAYOUN	96 RVUE	$e^+e^- \rightarrow \eta\gamma$
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¹⁸Solution corresponding to constructive ω - ρ interference.

¹⁹Reanalysis of DRUZHININ 84, DOLINSKY 89, DOLINSKY 91 taking into account the triangle anomaly contributions.

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

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

1.2 ± 0.6	30	²⁰ DZHELYADIN	79 CNTR	25–33 $\pi^- p$
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²⁰Superseded by DZHELYADIN 81B result above.

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

VALUE	DOCUMENT ID	TECN	COMMENT
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0.8942 ± 0.0062	DOLINSKY	89 ND	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
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 $\Gamma(3\pi^0)/\Gamma_{\text{total}}$ Γ_{16}/Γ

Violates *C* conservation.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<0.0003	90	PROKOSHKIN	95 GAM2	38 $\pi^- p \rightarrow 3\pi^0 n$
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 $\Gamma(3\gamma)/\Gamma_{\text{total}}$ Γ_{14}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID	TECN	COMMENT
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<1.9	95	²¹ ABELE	97E CBAR	0.0 $\bar{p}p \rightarrow 5\gamma$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

<2	90	²¹ PROKOSHKIN	95 GAM2	38 $\pi^- p \rightarrow 3\gamma n$
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²¹From direct 3γ decay search.

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

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

8.39 ± 0.24	9975	²² BENAYOUN	96 RVUE	$e^+e^- \rightarrow \pi^0\gamma$
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²²Reanalysis of DRUZHININ 84, DOLINSKY 89, DOLINSKY 91 taking into account the triangle anomaly contributions.

$\omega(782)$ REFERENCES

BENAYOUN	98	EPJ C2 269	M. Benayoun+	(IPNP, NOVO, ADLD, KNTY)
ABELE	97E	PL B411 361	A. Abele+	(Crystal Barrel Collab.)
BENAYOUN	96	ZPHY C72 221	M. Benayoun+	(IPNP, NOVO)
PROKOSHKIN	95	SPD 342 273	+Samoilenko	(SERP)
		Translated from	DANS 342 610.	
WURZINGER	95	PR C51 443	+Siebert+	(BONN, ORSAY, SACL, LOUC, CRAC)
ALDE	94B	PL B340 122	+Binon, Boutemour+	(SERP, BELG, LANL, LAPP, MONT)
AMSLER	94C	PL B327 425	+Armstrong, Ravndal+	(Crystal Barrel Collab.)
ALDE	93	PAN 56 1229	+Binon+	(SERP, LAPP, LANL, BELG, BRUX, CERN)
		Translated from	YAF 56 137.	
Also	94	ZPHY C61 35	Alde, Binon+	(SERP, LAPP, LANL, BELG, BRUX, CERN)
AMSLER	93B	PL B311 362	+Armstrong, v.Dombrowski+	(Crystal Barrel Collab.)
WEIDENAUER	93	ZPHY C59 387	+Duch+	(ASTERIX Collab.)
DOLINSKY	91	PRPL 202 99	+Druzhinin, Dubrovin+	(NOVO)
WEIDENAUER	90	ZPHY C47 353	+Duch, Heel, Kalinowsky+	(ASTERIX Collab.)
DOLINSKY	89	ZPHY C42 511	+Druzhinin, Dubrovin, Golubev+	(NOVO)
BITYUKOV	88B	SJNP 47 800	+Borisov, Viktorov, Golovkin+	(SERP)
		Translated from	YAF 47 1258.	
DOLINSKY	88	SJNP 48 277	+Druzhinin, Dubrovin, Golubev+	(NOVO)
		Translated from	YAF 48 442.	
KURDADZE	88	JETPL 47 512	+Leltchouk, Pakhtusova, Sidorov+	(NOVO)
		Translated from	ZETFP 47 432.	
AULCHENKO	87	PL B186 432	+Dolinsky, Druzhinin, Dubrovin+	(NOVO)
BARKOV	87	JETPL 46 164	+Vasserman, Vorobev, Ivanov	(NOVO)
		Translated from	ZETFP 46 132.	
KURDADZE	86	JETPL 43 643	+Lelchuk, Pakhtusova, Sidorov, Skriniskii+	(NOVO)
		Translated from	ZETFP 43 497.	
BARKOV	85	NP B256 365	+Chilingarov, Eidelman, Khazin, Lelchuk+	(NOVO)
DRUZHININ	84	PL 144B 136	+Golubev, Ivanchenko, Peryshkin+	(NOVO)
KURDADZE	83B	JETPL 36 274	+Pakhtusova, Sidorov+	(NOVO)
		Translated from	ZETFP 36 221.	
DZHELYADIN	81B	PL 102B 296	+Golovkin, Konstantinov+	(SERP)
CORDIER	80	NP B172 13	+Delcourt, Eschstruth, Fulda+	(LALO)
ROOS	80	LNC 27 321	+Pellinen	(HELS)
BENKHEIRI	79	NP B150 268	+Eisenstein+	(EPOL, CERN, CDEF, LALO)
DZHELYADIN	79	PL 84B 143	+Golovkin, Gritsuk+	(SERP)
COOPER	78B	NP B146 1	+Ganguli+	(TATA, CERN, CDEF, MADR)
QUENZER	78	PL 76B 512	+Ribes, Rumpf, Bertrand, Bizot, Chase+	(LALO)
VANAPEL...	78	NP B133 245	VanApeldoorn, Grundeman, Harting+	(ZEEM)
WICKLUND	78	PR D17 1197	+Ayres, Diebold, Greene, Kramer, Pawlicki	(ANL)
ANDREWS	77	PRL 38 198	+Fukushima, Harvey, Lobkowicz, May+	(ROCH)
GESSAROLI	77	NP B126 382	+	(BGNA, FIRZ, GENO, MILA, OXF, PAVI)
KEYNE	76	PR D14 28	+Binnie, Carr, Debenham, Garbutt+	(LOIC, SHMP)
Also	73B	PR D8 2789	Binnie, Carr, Debenham, Duane+	(LOIC, SHMP)
KALBFLEISCH	75	PR D11 987	+Strand, Chapman	(BNL, MICH)
AGUILAR-...	72B	PR D6 29	Aguilar-Benitez, Chung, Eisner, Samios	(BNL)
APEL	72B	PL 41B 234	+Auslander, Muller, Bertolucci+	(KARLK, KARLE, PISA)
BASILE	72B	Phil. Conf. 153	+Bollini, Broglin, Dalpiaz, Frabetti+	(CERN)
BENAKSAS	72B	PL 42B 507	+Cosme, Jean-Marie, Jullian	(ORSAY)
BENAKSAS	72C	PL 42B 511	+Cosme, Jean-Marie, Jullian, Laplanche+	(ORSAY)
BORENSTEIN	72	PR D5 1559	+Danburg, Kalbfleisch+	(BNL, MICH)
BROWN	72	PL 42B 117	+Downing, Holloway, Huld, Bernstein+	(ILL, ILLC)
DAKIN	72	PR D6 2321	+Hauser, Kreisler, Mischke	(PRIN)
RATCLIFF	72	PL 38B 345	+Bulos, Carnegie, Kluge, Leith, Lynch+	(SLAC)
ALVENSLEB...	71C	PRL 27 888	Alvensleben, Becker, Busza, Chen, Cohen+	(DESY)
BALDIN	71	SJNP 13 758	+Yergakov, Trebukhovskiy, Shishov	(ITEP)
		Translated from	YAF 13 1318.	

BEHREND	71	PRL 27 61	+Lee, Nordberg, Wehmann+	(ROCH, CORN, FNAL)
BIZZARRI	71	NP B27 140	+Montanet, Nilsson, D'Andlau+	(CERN, CDEF)
COYNE	71	NP B32 333	+Butler, Fang-Landau, MacNaughton	(LRL)
MOFFEIT	71	NP B29 349	+Bingham, Fretter+	(LRL, UCB, SLAC, TUFTS)
ABRAMOVI...	70	NP B20 209	Abramovich, Blumenfeld, Bruyant+	(CERN)
BIGGS	70B	PRL 24 1201	+Cliff, Gabathuler, Kitching, Rand	(DARE)
BIZZARRI	70	PRL 25 1385	+Ciapetti, Dore, Gaspero, Guidoni+	(ROMA, SYRA)
ROOS	70	DNPL/R7 173		(CERN)
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AUGUSTIN	69D	PL 28B 513	+Benaksas, Buon, Gracco, Haissinski+	(ORSAY)
BIZZARRI	69	NP B14 169	+Foster, Gavillet, Montanet+	(CERN, CDEF)
DEINET	69B	PL 30B 426	+Menzione, Muller, Buniatov+	(KARL, CERN)
JACQUET	69B	NC 63A 743	+Nguyen-Khac, Haatuft, Halsteinslid	(EPOL, BERG)
WILSON	69	Private Comm.		(HARV)
Also	69	PR 178 2095	Wehmann+	(HARV, CASE, SLAC, CORN, MCGI)
ASTVACAT...	68	PL 27B 45	Astvacaturov, Azimov, Baldin+	(JINR, MOSU)
BOLLINI	68C	NC 56A 531	+Buhler, Dalpiaz, Massam+	(CERN, BGNA, STRB)
BARASH	67B	PR 156 1399	+Kirsch, Miller, Tan	(COLU)
FELDMAN	67C	PR 159 1219	+Frati, Gleeson, Halpern, Nussbaum+	(PENN)
DIGIUGNO	66B	NC 44A 1272	+Peruzzi, Troise+	(NAPL, FRAS, TRST)
FLATTE	66	PR 145 1050	+Huwe, Murray, Button-Shafer, Solmitz+	(LRL)
JAMES	66	PR 142 896	+Kraybill	(YALE, BNL)
BARBARO-...	65	PRL 14 279	Barbaro-Galtieri, Tripp	(LRL)
BARMIN	64	JETP 18 1289	+Dolgolenko, Krestnikov+	(ITEP)
		Translated from ZETF 45 1879.		
KRAEMER	64	PR 136B 496	+Madansky, Fields+	(JHU, NWES, WOOD)
BUSCHBECK	63	Siena Conf. 1 166	+Czapp+	(VIEN, CERN, ANIK)

OTHER RELATED PAPERS

ABELE	97F	PL B411 354	A. Abele+	(Crystal Barrel Collab.)
DOLINSKY	86	PL B174 453	+Druzhinin, Dubrovin, Eidelman+	(NOVO)
KURDADZE	83	JETPL 37 733	+Lelchuk, Pakhtusova+	(NOVO)
		Translated from ZETFP 37 613.		
ALFF-...	62B	PRL 9 325	Aiff-Steinberger, Berley, Colley+	(COLU, RUTG)
STEVENSON	62	PR 125 687	+Alvarez, Maglich, Rosenfeld	(LRL)
MAGLICH	61	PRL 7 178	+Alvarez, Rosenfeld, Stevenson	(LRL)
PEVSNER	61	PRL 7 421	+Kraemer, Nussbaum, Richardson+	(JHU)
XUONG	61	PRL 7 327	+Lynch	(LRL)