

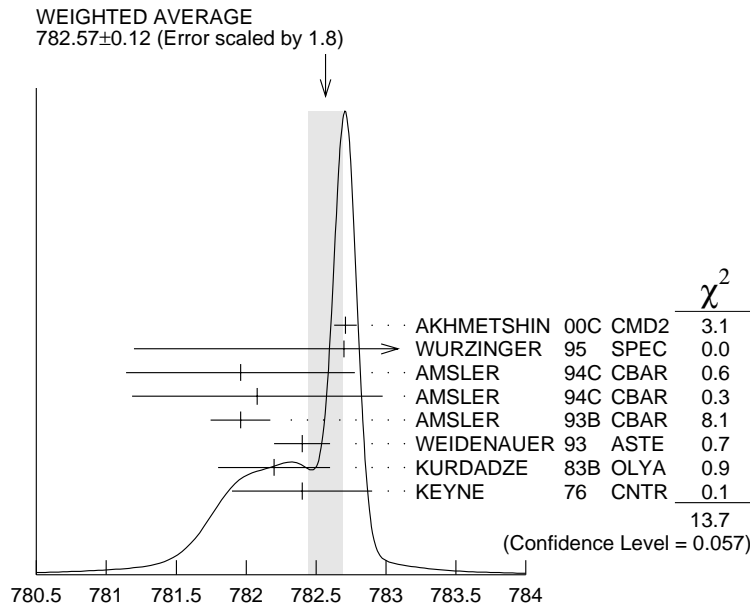
**$\omega(782)$** 

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

 **$\omega(782)$  MASS**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>782.57±0.12 OUR AVERAGE</b>		Error includes scale factor of 1.8. See the ideogram below.		
782.71±0.07±0.04	11200	AKHMETSHIN 00C	CMD2	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
782.7 ±0.1 ±1.5	19500	WURZINGER 95	SPEC	$1.33 pd \rightarrow {}^3\text{He}\omega$
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	$\bar{p}p \rightarrow 2\pi^+2\pi^-\pi^0$
782.2 ±0.4	1488	KURDADZE 83B	OLYA	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
782.4 ±0.5	7000	<sup>1</sup> KEYNE 76	CNTR	$\pi^-p \rightarrow \omega n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
781.78±0.10		<sup>2</sup> BARKOV 87	CMD	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
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	<sup>3</sup> 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		<sup>4</sup> BIGGS 70B	CNTR	$<4.1 \gamma C \rightarrow \pi^+\pi^-C$
782.4 ±0.5	2400	BIZZARRI 69	HBC	$0.0 \bar{p}p$

<sup>1</sup> Observed by threshold-crossing technique. Mass resolution = 4.8 MeV FWHM.<sup>2</sup> Systematic uncertainties underestimated. Superseded by AKHMETSHIN 00C.<sup>3</sup> From best-resolution sample of COYNE 71.<sup>4</sup> From  $\omega$ - $\rho$  interference in the  $\pi^+\pi^-$  mass spectrum assuming  $\omega$  width 12.6 MeV.



$\omega(782)$  mass (MeV)

### $\omega(782)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>8.44±0.09 OUR AVERAGE</b>				
8.68±0.23±0.10	11200	AKHMETSHIN 00C	CMD2	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
8.2 ±0.3	19500	WURZINGER 95	SPEC	1.33 $pd \rightarrow {}^3\text{He}\omega$
8.4 ±0.1		<sup>5</sup> 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	<sup>6</sup> 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 $\pi^+p \rightarrow p\pi^+\pi^+\pi^-\pi^0$

<sup>5</sup> Relativistic Breit-Wigner includes radiative corrections.

<sup>6</sup> Observed by threshold-crossing technique. Mass resolution = 4.8 MeV FWHM.

## $\omega(782)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level
$\Gamma_1$ $\pi^+ \pi^- \pi^0$	(88.8 $\pm$ 0.7) %	
$\Gamma_2$ $\pi^0 \gamma$	( 8.5 $\pm$ 0.5 ) %	
$\Gamma_3$ $\pi^+ \pi^-$	( 2.21 $\pm$ 0.30 ) %	
$\Gamma_4$ neutrals (excluding $\pi^0 \gamma$ )	( 5.3 $^{+8.7}_{-3.5}$ ) $\times 10^{-3}$	
$\Gamma_5$ $\eta \gamma$	( 6.5 $\pm$ 1.0 ) $\times 10^{-4}$	
$\Gamma_6$ $\pi^0 e^+ e^-$	( 5.9 $\pm$ 1.9 ) $\times 10^{-4}$	
$\Gamma_7$ $\pi^0 \mu^+ \mu^-$	( 9.6 $\pm$ 2.3 ) $\times 10^{-5}$	
$\Gamma_8$ $e^+ e^-$	( 7.07 $\pm$ 0.19 ) $\times 10^{-5}$	S=1.1
$\Gamma_9$ $\pi^+ \pi^- \pi^0 \pi^0$	< 2 %	CL=90%
$\Gamma_{10}$ $\pi^+ \pi^- \gamma$	< 3.6 $\times 10^{-3}$	CL=95%
$\Gamma_{11}$ $\pi^+ \pi^- \pi^+ \pi^-$	< 1 $\times 10^{-3}$	CL=90%
$\Gamma_{12}$ $\pi^0 \pi^0 \gamma$	( 7.2 $\pm$ 2.5 ) $\times 10^{-5}$	
$\Gamma_{13}$ $\mu^+ \mu^-$	< 1.8 $\times 10^{-4}$	CL=90%
$\Gamma_{14}$ $3\gamma$	< 1.9 $\times 10^{-4}$	CL=95%
<b>Charge conjugation (C) violating modes</b>		
$\Gamma_{15}$ $\eta \pi^0$	C < 1 $\times 10^{-3}$	CL=90%
$\Gamma_{16}$ $3\pi^0$	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  $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$ , 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

$\Gamma(e^+ e^-)$   $\Gamma_8$

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
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**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	<sup>7</sup> AKHMETSHIN 00C	CMD2	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
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<sup>7</sup> Using  $B(\omega \rightarrow \pi^+ \pi^- \pi^0) = 0.888 \pm 0.007$ .

### $\omega(782) \Gamma(i)\Gamma(e^+ e^-)/\Gamma(\text{total})$

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

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
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<b>0.528 ± 0.012 ± 0.007</b>	11200	AKHMETSHIN 00C	CMD2	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
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### $\omega(782)$ BRANCHING RATIOS

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

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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**0.102 ± 0.008 OUR FIT**

**0.103<sup>+0.011</sup><sub>-0.010</sub> 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 $K^- p \rightarrow$ AMM

0.06 <sup>+0.05</sup> <sub>-0.02</sub>		JAMES	66 HBC	2.1 $\pi^+ p$
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0.08 ± 0.03	35	KRAEMER	64 DBC	1.2 $\pi^+ d$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.11 ± 0.02	20	BUSCHBECK	63 HBC	1.5 $K^- p$
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$\Gamma(\pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$   $\Gamma_3/\Gamma_1$

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

VALUE	DOCUMENT ID	TECN	COMMENT
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**0.0249 ± 0.0035 OUR FIT**

**0.026 ± 0.005 OUR AVERAGE**

0.021 <sup>+0.028</sup> <sub>-0.009</sub>		<sup>8</sup> RATCLIFF	72 ASPK	15 $\pi^- p \rightarrow n 2\pi$
0.028 ± 0.006		BEHREND	71 ASPK	Photoproduction
0.022 <sup>+0.009</sup> <sub>-0.01</sub>		<sup>9</sup> ROOS	70 RVUE	

<sup>8</sup> Significant interference effect observed. NB of  $\omega \rightarrow 3\pi$  comes from an extrapolation.

<sup>9</sup> ROOS 70 combines ABRAMOVICH 70 and BIZZARRI 70.

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

$\Gamma_2/\Gamma_1$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.096±0.006 OUR FIT</b>			
<b>0.096±0.006 OUR AVERAGE</b>			
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	

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

$\Gamma_{10}/\Gamma_1$

<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. ● ● ●				
<0.066	90	KALBFLEISCH 75	HBC	$2.18 K^-p \rightarrow \Lambda\pi^+\pi^-\gamma$
<0.05	90	FLATTE 66	HBC	$1.2 - 1.7 K^-p \rightarrow \Lambda\pi^+\pi^-\gamma$

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

$\Gamma_{10}/\Gamma$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.0036</b>	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	$32\pi^-p \rightarrow \pi^+\pi^-\gamma X$

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

$\Gamma_{11}/\Gamma$

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;1 × 10<sup>-3</sup></b>	90	KURDADZE 88	OLYA	$e^+e^- \rightarrow \pi^+\pi^-\pi^+\pi^-$

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

$\Gamma_9/\Gamma$

<u>VALUE (units 10<sup>-2</sup>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;2</b>	90	KURDADZE 86	OLYA	$e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$

$\Gamma(\mu^+\mu^-)/\Gamma(\pi^+\pi^-\pi^0)$

$\Gamma_{13}/\Gamma_1$

<u>VALUE (units 10<sup>-3</sup>)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.2</b>	90	WILSON 69	OSPK	$12\pi^-C \rightarrow Fe$
● ● ● 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	$2.7 K^-p$

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\pi^0\gamma)$

$\Gamma_{12}/\Gamma_2$

<u>VALUE</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.00085±0.00029</b>		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	$1.3-2.8\pi^-p$

$\Gamma(\eta\pi^0)/\Gamma_{\text{total}}$   $\Gamma_{15}/\Gamma$   
 Violates C conservation.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.001</b>	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
<b>&lt;0.016</b>	90	<sup>10</sup> 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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<sup>10</sup> Restated by us using  $B(\eta \rightarrow \text{charged modes}) = 29.2\%$ .

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

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.099±0.008 OUR FIT</b>			
<b>0.124±0.021</b>	FELDMAN	67C	OSPK $1.2\pi^-p$

$\Gamma(\pi^0\pi^0\gamma)/\Gamma(\pi^+\pi^-\pi^0)$   $\Gamma_{12}/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.00045</b>	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
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$\Gamma(\eta\gamma)/\Gamma(\pi^0\gamma)$   $\Gamma_5/\Gamma_2$

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

0.0098±0.0024	<sup>11</sup> ALDE	93	GAM2	$38\pi^-p \rightarrow \omega n$
0.0082±0.0033	<sup>12</sup> DOLINSKY	89	ND	$e^+e^- \rightarrow \eta\gamma$
0.010 ±0.045	APEL	72B	OSPK	$4-8\pi^-p \rightarrow n3\gamma$

<sup>11</sup> Model independent determination.

<sup>12</sup> Solution corresponding to constructive  $\omega$ - $\rho$  interference.

$\Gamma(\pi^0\mu^+\mu^-)/\Gamma_{\text{total}}$   $\Gamma_7/\Gamma$

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

$\Gamma(\pi^0e^+e^-)/\Gamma_{\text{total}}$   $\Gamma_6/\Gamma$

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

$\Gamma(e^+e^-)/\Gamma_{\text{total}}$   $\Gamma_8/\Gamma$

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.707±0.019 OUR AVERAGE</b>		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		<sup>13</sup> AUGUSTIN	69D OSPK	$e^+e^- \rightarrow 2\pi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.685±0.016	11200	<sup>14</sup> AKHMETSHIN	00C CMD2	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
0.65 ±0.13	33	<sup>15</sup> ASTVACAT...	68 OSPK	Assume SU(3)+mixing

<sup>13</sup> Rescaled by us to correspond to  $\omega$  width 8.4 MeV.

<sup>14</sup> Using  $B(\omega \rightarrow \pi^+\pi^-\pi^0)=0.888 \pm 0.007$ .

<sup>15</sup> Not resolved from  $\rho$  decay. Error statistical only.

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

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.090±0.006 OUR FIT</b>				
<b>0.081±0.011 OUR AVERAGE</b>				
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 $\pi^- p$

$\Gamma(\pi^+\pi^-)/\Gamma_{\text{total}}$   $\Gamma_3/\Gamma$

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

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.0221±0.0030 OUR FIT</b>			
<b>0.021 ±0.004 OUR AVERAGE</b>			
0.023 ±0.005	BARKOV	85 OLYA	$e^+e^-$
0.016 <sup>+0.009</sup> <sub>-0.007</sub>	QUENZER	78 CNTR	$e^+e^-$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
0.019 ±0.003	<sup>16</sup> GARDNER	99 RVUE	$e^+e^- \rightarrow \pi^+\pi^-$
0.023 ±0.004	<sup>17</sup> BENAYOUN	98 RVUE	$e^+e^- \rightarrow \pi^+\pi^-$ ,
			$\mu^+\mu^-$
0.010 ±0.001	<sup>18</sup> WICKLUND	78 ASPK	3,4,6 $\pi^\pm N$
0.0122±0.0030	ALVENSLEB...	71C CNTR	Photoproduction
0.013 <sup>+0.012</sup> <sub>-0.009</sub>	MOFFEIT	71 HBC	2.8,4.7 $\gamma p$
0.0080 <sup>+0.0028</sup> <sub>-0.002</sub>	<sup>19</sup> BIGGS	70B CNTR	4.2 $\gamma C \rightarrow \pi^+\pi^- C$

<sup>16</sup> Using the data of BARKOV 85.

<sup>17</sup> Using the data of BARKOV 85 in the hidden local symmetry model.

<sup>18</sup> From a model-dependent analysis assuming complete coherence.

<sup>19</sup> Re-evaluated under  $\Gamma(\pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$  by BEHREND 71 using more accurate  $\omega \rightarrow \rho$  photoproduction cross-section ratio.

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

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

0.22±0.07		<sup>20</sup> DAKIN	72 OSPK	1.4 $\pi^- p \rightarrow nMM$
<0.19	90	DEINET	69B OSPK	

<sup>20</sup> 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
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.78±0.07		<sup>21</sup> DAKIN	72 OSPK	1.4 $\pi^- p \rightarrow nMM$
>0.81	90	DEINET	69B OSPK	

<sup>21</sup> Error statistical only. Authors obtain good fit also assuming  $\pi^0 \gamma$  as the only neutral decay.

$\Gamma(\eta \gamma)/\Gamma_{\text{total}}$   $\Gamma_5/\Gamma$

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

6.6 ± 1.7		<sup>22</sup> 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		<sup>23</sup> DOLINSKY	89 ND	$e^+ e^- \rightarrow \eta \gamma$
3.0 +2.5 -1.8		<sup>23</sup> ANDREWS	77 CNTR	6.7–10 $\gamma Cu$

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

0.7 to 5.5		<sup>24</sup> CASE	00 CBAR	0.0 $p\bar{p} \rightarrow \eta \eta \gamma$
6.56 +2.41 -2.55	3525	<sup>23,25</sup> BENAYOUN	96 RVUE	$e^+ e^- \rightarrow \eta \gamma$

<sup>22</sup> No flat  $\eta \eta \gamma$  background assumed.

<sup>23</sup> Solution corresponding to constructive  $\omega$ - $\rho$  interference.

<sup>24</sup> Depending on the degree of coherence with the flat  $\eta \eta \gamma$  background and using  $B(\omega \rightarrow \pi^0 \gamma) = (8.5 \pm 0.5) \times 10^{-2}$ .

<sup>25</sup> Reanalysis of DRUZHININ 84, DOLINSKY 89, DOLINSKY 91 taking into account the triangle anomaly contributions.

$\Gamma(\pi^0 \mu^+ \mu^-)/\Gamma(\mu^+ \mu^-)$   $\Gamma_7/\Gamma_{13}$

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	<sup>26</sup> DZHELYADIN	79 CNTR	25–33 $\pi^- p$
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<sup>26</sup> Superseded by DZHELYADIN 81B result above.

$\Gamma(\pi^+ \pi^- \pi^0)/\Gamma_{\text{total}}$   $\Gamma_1/\Gamma$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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**0.8942±0.0062** DOLINSKY 89 ND  $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$

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

0.880 ± 0.020 ± 0.032	11200	<sup>27</sup> AKHMETSHIN	00C CMD2	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
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<sup>27</sup> Using  $\Gamma(e^+ e^-) = 0.60 \pm 0.02$  keV.



$\Gamma(3\pi^0)/\Gamma_{\text{total}}$					$\Gamma_{16}/\Gamma$
Violates <i>C</i> conservation.					
VALUE	CL%	DOCUMENT ID	TECN	COMMENT	
<0.0003	90	PROKOSHKIN 95	GAM2	38 $\pi^- p \rightarrow 3\pi^0 n$	

$\Gamma(3\gamma)/\Gamma_{\text{total}}$					$\Gamma_{14}/\Gamma$
VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT	
<1.9	95	<sup>28</sup> ABELE	97E	CBAR 0.0 $\bar{p} p \rightarrow 5\gamma$	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<2	90	<sup>28</sup> PROKOSHKIN 95	GAM2	38 $\pi^- p \rightarrow 3\gamma n$	
<sup>28</sup> From direct $3\gamma$ decay search.					

$\Gamma(\pi^0\gamma)/\Gamma_{\text{total}}$					$\Gamma_2/\Gamma$
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	<sup>29</sup> BENAYOUN	96	RVUE $e^+e^- \rightarrow \pi^0\gamma$	
<sup>29</sup> Reanalysis of DRUZHININ 84, DOLINSKY 89, DOLINSKY 91 taking into account the triangle anomaly contributions.					

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