

# $f_1(1285)$

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

## $f_1(1285)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1281.8 ± 0.6 OUR AVERAGE</b>				
Error includes scale factor of 1.6. See the ideogram below.				
1276.1 ± 8.1 ± 8.0	203	BAI	04J BES2	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
1274 ± 6	237	ABDALLAH	03H DLPH	$91.2 e^+e^- \rightarrow K_S^0 K^\pm \pi^\mp + X$
1280 ± 4		ACCIARRI	01G L3	
1288 ± 4 ± 5	20k	ADAMS	01B B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$
1284 ± 6	1400	ALDE	97B GAM4	100 $\pi^- p \rightarrow \eta\pi^0\pi^0 n$
1281 ± 1		BARBERIS	97B OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$
1281 ± 1		BARBERIS	97C OMEG	450 $pp \rightarrow ppK_S^0 K^\pm \pi^\mp$
1280 ± 2		<sup>1</sup> ANTINORI	95 OMEG	300,450 $pp \rightarrow pp2(\pi^+\pi^-)$
1282.2 ± 1.5		LEE	94 MPS2	18 $\pi^- p \rightarrow K^+ \bar{K}^0 2\pi^- p$
1279 ± 5		FUKUI	91C SPEC	8.95 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
1278 ± 2	140	ARMSTRONG	89 OMEG	300 $pp \rightarrow K\bar{K}\pi pp$
1278 ± 2		ARMSTRONG	89G OMEG	85 $\pi^+ p \rightarrow 4\pi pp, pp \rightarrow 4\pi pp$
1280.1 ± 2.1	60	RATH	89 MPS	21.4 $\pi^- p \rightarrow K_S^0 K_S^0 \pi^0 n$
1285 ± 1	4750	<sup>2</sup> BIRMAN	88 MPS	8 $\pi^- p \rightarrow K^+ \bar{K}^0 \pi^- n$
1280 ± 1	504	BITYUKOV	88 SPEC	32.5 $\pi^- p \rightarrow K^+ K^- \pi^0 n$
1280 ± 4		ANDO	86 SPEC	8 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
1277 ± 2	420	REEVES	86 SPEC	6.6 $p\bar{p} \rightarrow KK\pi X$
1285 ± 2		CHUNG	85 SPEC	8 $\pi^- p \rightarrow NK\bar{K}\pi$
1279 ± 2	604	ARMSTRONG	84 OMEG	85 $\pi^+ p \rightarrow K\bar{K}\pi\pi p, pp \rightarrow K\bar{K}\pi pp$
1286 ± 1		CHAUVAT	84 SPEC	ISR 31.5 $pp$
1278 ± 4		EVANGELIS...	81 OMEG	12 $\pi^- p \rightarrow \eta\pi^+\pi^-\pi^- p$
1283 ± 3	103	DIONISI	80 HBC	4 $\pi^- p \rightarrow K\bar{K}\pi n$
1282 ± 2	320	NACASCH	78 HBC	0.7,0.76 $\bar{p}p \rightarrow K\bar{K}3\pi$
1279 ± 5	210	GRASSLER	77 HBC	16 $\pi^\mp p$
1286 ± 3	180	DUBOC	72 HBC	1.2 $\bar{p}p \rightarrow 2K4\pi$
1283 ± 5		DAHL	67 HBC	1.6-4.2 $\pi^- p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1281.9 ± 0.5		<sup>3</sup> SOSA	99 SPEC	$pp \rightarrow p_{\text{slow}} (K_S^0 K^+ \pi^-) p_{\text{fast}}$
1282.8 ± 0.6		<sup>3</sup> SOSA	99 SPEC	$pp \rightarrow p_{\text{slow}} (K_S^0 K^- \pi^+) p_{\text{fast}}$
1270 ± 10		AMELIN	95 VES	37 $\pi^- N \rightarrow \pi^- \pi^+ \pi^- \gamma N$
1280 ± 2		ABATZIS	94 OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$
1282 ± 4		ARMSTRONG	93C E760	$\bar{p}p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$

1270	$\pm 6$	$\pm 10$		ARMSTRONG	92C	OMEG	300	$pp \rightarrow p p \pi^+ \pi^- \gamma$
1281	$\pm 1$			ARMSTRONG	89E	OMEG	300	$pp \rightarrow p p 2(\pi^+ \pi^-)$
1279	$\pm 6$	$\pm 10$	16	BECKER	87	MRK3		$e^+ e^- \rightarrow \phi K \bar{K} \pi$
1286	$\pm 9$			GIDAL	87	MRK2		$e^+ e^- \rightarrow e^+ e^- \eta \pi^+ \pi^-$
1287	$\pm 5$		353	BITYUKOV	84B	SPEC	32	$\pi^- p \rightarrow K^+ K^- \pi^0 n$
~ 1279				<sup>4</sup> TORNQVIST	82B	RVUE		
1275	$\pm 6$		31	BROMBERG	80	SPEC	100	$\pi^- p \rightarrow K \bar{K} \pi X$
1288	$\pm 9$		200	GURTU	79	HBC	4.2	$K^- p \rightarrow n \eta 2\pi$
~ 1275.0			46	<sup>5</sup> STANTON	79	CNTR	8.5	$\pi^- p \rightarrow n 2\gamma 2\pi$
1271	$\pm 10$		34	CORDEN	78	OMEG	12-15	$\pi^- p \rightarrow K^+ K^- \pi n$
1295	$\pm 12$		85	CORDEN	78	OMEG	12-15	$\pi^- p \rightarrow n 5\pi$
1292	$\pm 10$		150	DEFOIX	72	HBC	0.7	$\bar{p} p \rightarrow 7\pi$
1280	$\pm 3$		500	<sup>6</sup> THUN	72	MMS	13.4	$\pi^- p$
1303	$\pm 8$			BARDADIN-...	71	HBC	8	$\pi^+ p \rightarrow p 6\pi$
1283	$\pm 6$			BOESEBECK	71	HBC	16.0	$\pi p \rightarrow p 5\pi$
1270	$\pm 10$			CAMPBELL	69	DBC	2.7	$\pi^+ d$
1285	$\pm 7$			LORSTAD	69	HBC	0.7	$\bar{p} p$ , 4,5-body
1290	$\pm 7$			D'ANDLAU	68	HBC	1.2	$\bar{p} p$ , 5-6 body

<sup>1</sup> Supersedes ABATZIS 94, ARMSTRONG 89E.

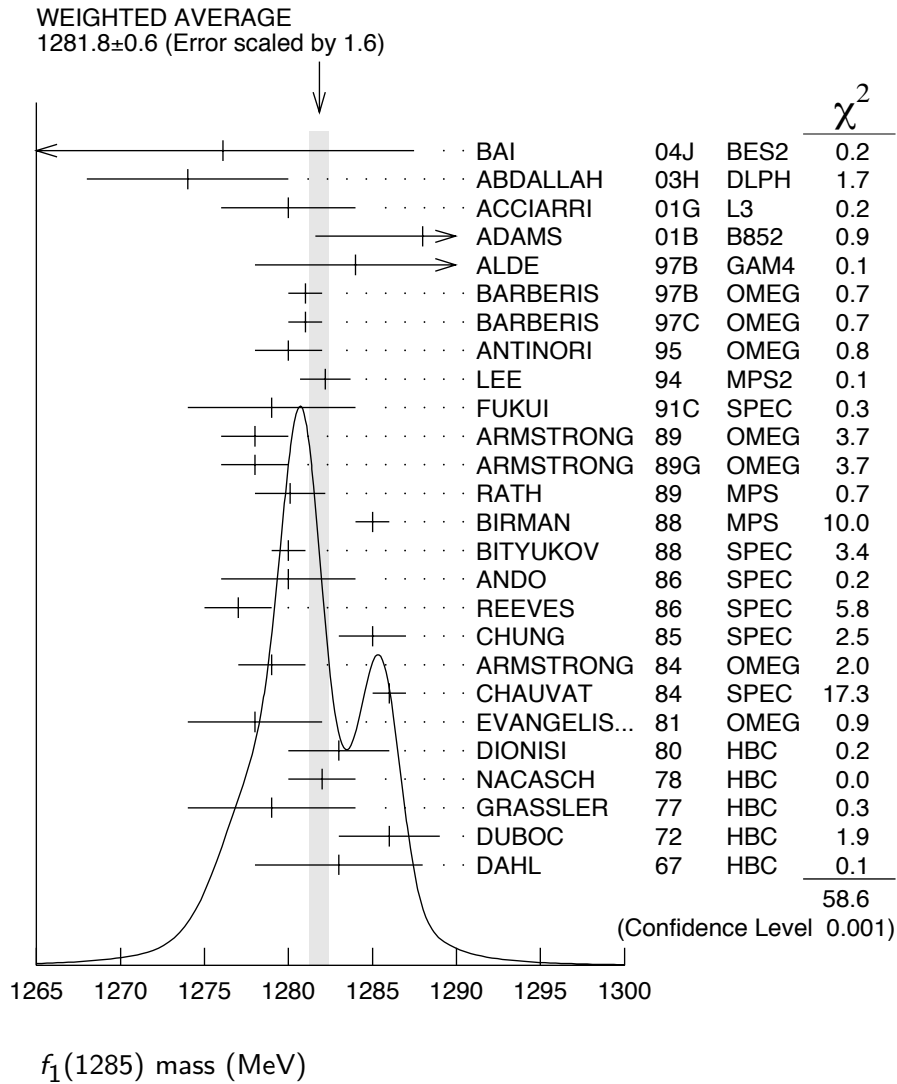
<sup>2</sup> From partial wave analysis of  $K^+ \bar{K}^0 \pi^-$  system.

<sup>3</sup> No systematic error given.

<sup>4</sup> From a unitarized quark-model calculation.

<sup>5</sup> From phase shift analysis of  $\eta \pi^+ \pi^-$  system.

<sup>6</sup> Seen in the missing mass spectrum.



### $f_1(1285)$ WIDTH

Only experiments giving width error less than 20 MeV are kept for averaging.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>24.2± 1.1 OUR AVERAGE</b>		Error includes scale factor of 1.3. See the ideogram below.		
40.0± 8.6± 9.3	203	BAI	04J BES2	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
29 ±12	237	ABDALLAH	03H DLPH	$91.2 e^+e^- \rightarrow K_S^0 K^\pm \pi^\mp + X$
45 ± 9 ± 7	20k	ADAMS	01B B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$
55 ±18	1400	ALDE	97B GAM4	100 $\pi^- p \rightarrow \eta\pi^0\pi^0 n$
24 ± 3		BARBERIS	97B OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$
20 ± 2		BARBERIS	97C OMEG	450 $pp \rightarrow ppK_S^0 K^\pm \pi^\mp$

36 ± 5		<sup>7</sup> ANTINORI	95	OMEG	300,450 $pp \rightarrow$ $pp2(\pi^+\pi^-)$
29.0 ± 4.1		LEE	94	MPS2	18 $\pi^- p \rightarrow$ $K^+\bar{K}^0 2\pi^- p$
25 ± 4	140	ARMSTRONG	89	OMEG	300 $pp \rightarrow K\bar{K}\pi pp$
22 ± 2	4750	<sup>8</sup> BIRMAN	88	MPS	8 $\pi^- p \rightarrow$ $K^+\bar{K}^0 \pi^- n$
25 ± 4	504	BITYUKOV	88	SPEC	32.5 $\pi^- p \rightarrow$ $K^+ K^- \pi^0 n$
19 ± 5		ANDO	86	SPEC	8 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
32 ± 8	420	REEVES	86	SPEC	6.6 $p\bar{p} \rightarrow KK\pi X$
22 ± 2		CHUNG	85	SPEC	8 $\pi^- p \rightarrow NK\bar{K}\pi$
32 ± 3	604	ARMSTRONG	84	OMEG	85 $\pi^+ p \rightarrow K\bar{K}\pi\pi p,$ $pp \rightarrow K\bar{K}\pi pp$
24 ± 3		CHAUVAT	84	SPEC	ISR 31.5 $pp$
29 ± 10	103	DIONISI	80	HBC	4 $\pi^- p \rightarrow K\bar{K}\pi n$
28.3 ± 6.7	320	NACASCH	78	HBC	0.7, 0.76 $p\bar{p} \rightarrow K\bar{K}3\pi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
18.2 ± 1.2		<sup>9</sup> SOSA	99	SPEC	$pp \rightarrow p_{\text{slow}}$ $(K_S^0 K^+ \pi^-) p_{\text{fast}}$
19.4 ± 1.5		<sup>9</sup> SOSA	99	SPEC	$pp \rightarrow p_{\text{slow}}$ $(K_S^0 K^- \pi^+) p_{\text{fast}}$
40 ± 5		ABATZIS	94	OMEG	450 $pp \rightarrow$ $pp2(\pi^+\pi^-)$
31 ± 5		ARMSTRONG	89E	OMEG	300 $pp \rightarrow$ $pp2(\pi^+\pi^-)$
41 ± 12		ARMSTRONG	89G	OMEG	85 $\pi^+ p \rightarrow 4\pi\pi p,$ $pp \rightarrow 4\pi pp$
17.9 ± 10.9	60	RATH	89	MPS	21.4 $\pi^- p \rightarrow$ $K_S^0 K_S^0 \pi^0 n$
14 <sup>+20</sup> <sub>-14</sub> ± 10	16	BECKER	87	MRK3	$e^+ e^- \rightarrow \phi K\bar{K}\pi$
26 ± 12		EVANGELIS...	81	OMEG	12 $\pi^- p \rightarrow$ $\eta\pi^+\pi^-\pi^- p$
25 ± 15	200	GURTU	79	HBC	4.2 $K^- p \rightarrow n\eta 2\pi$
~ 10		<sup>10</sup> STANTON	79	CNTR	8.5 $\pi^- p \rightarrow n2\gamma 2\pi$
24 ± 18	210	GRASSLER	77	HBC	16 $\pi^\mp p$
28 ± 5	150	<sup>11</sup> DEFOIX	72	HBC	0.7 $p\bar{p} \rightarrow 7\pi$
46 ± 9	180	<sup>11</sup> DUBOC	72	HBC	1.2 $p\bar{p} \rightarrow 2K4\pi$
37 ± 5	500	<sup>12</sup> THUN	72	MMS	13.4 $\pi^- p$
10 ± 10		BOESEBECK	71	HBC	16.0 $\pi p \rightarrow p5\pi$
30 ± 15		CAMPBELL	69	DBC	2.7 $\pi^+ d$
60 ± 15		<sup>11</sup> LORSTAD	69	HBC	0.7 $p\bar{p}$ , 4,5-body
35 ± 10		<sup>11</sup> DAHL	67	HBC	1.6–4.2 $\pi^- p$

<sup>7</sup> Supersedes ABATZIS 94, ARMSTRONG 89E.

<sup>8</sup> From partial wave analysis of  $K^+\bar{K}^0\pi^-$  system.

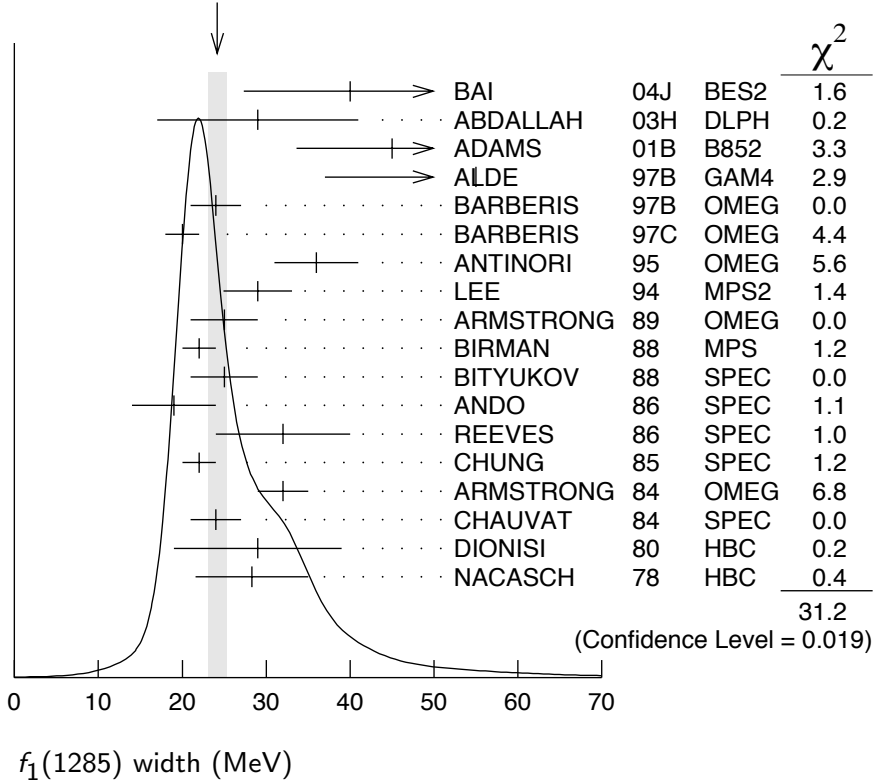
<sup>9</sup> No systematic error given.

<sup>10</sup> From phase shift analysis of  $\eta\pi^+\pi^-$  system.

<sup>11</sup> Resolution is not unfolded.

<sup>12</sup> Seen in the missing mass spectrum.

WEIGHTED AVERAGE  
 $24.2 \pm 1.1$  (Error scaled by 1.3)



### $f_1(1285)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level
$\Gamma_1$ $4\pi$	$(33.1^{+2.1}_{-1.8})\%$	S=1.3
$\Gamma_2$ $\pi^0 \pi^0 \pi^+ \pi^-$	$(22.0^{+1.4}_{-1.2})\%$	S=1.3
$\Gamma_3$ $2\pi^+ 2\pi^-$	$(11.0^{+0.7}_{-0.6})\%$	S=1.3
$\Gamma_4$ $\rho^0 \pi^+ \pi^-$	$(11.0^{+0.7}_{-0.6})\%$	S=1.3
$\Gamma_5$ $\rho^0 \rho^0$	seen	
$\Gamma_6$ $4\pi^0$	$< 7 \times 10^{-4}$	CL=90%
$\Gamma_7$ $\eta \pi \pi$	$(52 \pm 16)\%$	
$\Gamma_8$ $a_0(980)\pi$ [ignoring $a_0(980) \rightarrow K \bar{K}$ ]	$(36 \pm 7)\%$	
$\Gamma_9$ $\eta \pi \pi$ [excluding $a_0(980)\pi$ ]	$(16 \pm 7)\%$	
$\Gamma_{10}$ $K \bar{K} \pi$	$(9.0 \pm 0.4)\%$	S=1.1
$\Gamma_{11}$ $K \bar{K}^*(892)$	not seen	
$\Gamma_{12}$ $\gamma \rho^0$	$(5.5 \pm 1.3)\%$	S=2.8

$\Gamma_{13}$	$\phi\gamma$	$(7.4 \pm 2.6) \times 10^{-4}$
$\Gamma_{14}$	$\gamma\gamma^*$	
$\Gamma_{15}$	$\gamma\gamma$	

### CONSTRAINED FIT INFORMATION

An overall fit to 7 branching ratios uses 16 measurements and one constraint to determine 5 parameters. The overall fit has a  $\chi^2 = 24.7$  for 12 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.

$x_8$	-17			
$x_9$	-8	-95		
$x_{10}$	46	-9	-4	
$x_{12}$	-36	-4	-2	-34
	$x_1$	$x_8$	$x_9$	$x_{10}$

#### $f_1(1285) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\eta\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_7\Gamma_{15}/\Gamma = (\Gamma_8+\Gamma_9)\Gamma_{15}/\Gamma$			
<u>VALUE (keV)</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>&lt;0.62</b>	95	GIDAL	87	MRK2 $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$

$\Gamma(\eta\pi\pi) \times \Gamma(\gamma\gamma^*)/\Gamma_{\text{total}}$	$\Gamma_7\Gamma_{14}/\Gamma = (\Gamma_8+\Gamma_9)\Gamma_{14}/\Gamma$			
<u>VALUE (keV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>1.4 ± 0.4 OUR AVERAGE</b> Error includes scale factor of 1.4.				
1.18 ± 0.25 ± 0.20	26	<sup>13,14</sup> AIHARA	88B	TPC $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$
2.30 ± 0.61 ± 0.42		<sup>13,15</sup> GIDAL	87	MRK2 $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$

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

1.8 ± 0.3 ± 0.3	420	<sup>16</sup> ACHARD	02B	L3 183-209 $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$
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<sup>13</sup> Assuming a  $\rho$ -pole form factor.

<sup>14</sup> Published value multiplied by  $\eta\pi\pi$  branching ratio 0.49.

<sup>15</sup> Published value divided by 2 and multiplied by the  $\eta\pi\pi$  branching ratio 0.49.

<sup>16</sup> Published value multiplied by the  $\eta\pi\pi$  branching ratio 0.52.

## $f_1(1285)$ BRANCHING RATIOS

### $\Gamma(K\bar{K}\pi)/\Gamma(4\pi)$

$\Gamma_{10}/\Gamma_1$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.271±0.016 OUR FIT</b>			Error includes scale factor of 1.3.
<b>0.271±0.016 OUR AVERAGE</b>			Error includes scale factor of 1.2.
0.265±0.014	<sup>17</sup> BARBERIS	97C	OMEG 450 $pp \rightarrow ppK_S^0 K^\pm \pi^\mp$
0.28 ±0.05	<sup>18</sup> ARMSTRONG	89E	OMEG 300 $pp \rightarrow pp f_1(1285)$
0.37 ±0.03 ±0.05	<sup>19</sup> ARMSTRONG	89G	OMEG 85 $\pi p \rightarrow 4\pi X$
			<sup>17</sup> Using $2(\pi^+ \pi^-)$ data from BARBERIS 97B.
			<sup>18</sup> Assuming $\rho\pi\pi$ and $a_0(980)\pi$ intermediate states.
			<sup>19</sup> $4\pi$ consistent with being entirely $\rho\pi\pi$ .

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

$\Gamma_2/\Gamma = \frac{2}{3}\Gamma_1/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>
<b>0.220<sup>+0.014</sup><sub>-0.012</sub> OUR FIT</b>	Error includes scale factor of 1.3.

### $\Gamma(2\pi^+ 2\pi^-)/\Gamma_{\text{total}}$

$\Gamma_3/\Gamma = \frac{1}{3}\Gamma_1/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>
<b>0.110<sup>+0.007</sup><sub>-0.006</sub> OUR FIT</b>	Error includes scale factor of 1.3.

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

$\Gamma_4/\Gamma = \frac{1}{3}\Gamma_1/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>
<b>0.110<sup>+0.007</sup><sub>-0.006</sub> OUR FIT</b>	Error includes scale factor of 1.3.

### $\Gamma(\rho^0 \rho^0)/\Gamma_{\text{total}}$

$\Gamma_5/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>COMMENT</u>
• • •	We do not use the following data for averages, fits, limits, etc. • • •	
seen	BARBERIS	00C 450 $pp \rightarrow p_f 4\pi p_s$

### $\Gamma(K\bar{K}\pi)/\Gamma(\eta\pi\pi)$

$\Gamma_{10}/\Gamma_7 = \Gamma_{10}/(\Gamma_8 + \Gamma_9)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>0.171±0.013 OUR FIT</b>			Error includes scale factor of 1.1.
<b>0.170±0.012 OUR AVERAGE</b>			
0.166±0.01 ±0.008	BARBERIS	98C	OMEG 450 $pp \rightarrow p_f f_1(1285) p_s$
0.42 ±0.15	GURTU	79	HBC 4.2 $K^- p$
0.5 ±0.2	<sup>20</sup> CORDEN	78	OMEG 12–15 $\pi^- p$
0.20 ±0.08	<sup>21</sup> DEFOIX	72	HBC 0.7 $\bar{p} p \rightarrow 7\pi$
0.16 ±0.08	CAMPBELL	69	DBC 2.7 $\pi^+ d$
			<sup>20</sup> CORDEN 78 assumes low-mass $\eta\pi\pi$ region is dominantly $1^{++}$ . See BARBERIS 98C and MANAK 00A for discussion.
			<sup>21</sup> $K\bar{K}$ system characterized by the $l = 1$ threshold enhancement. (See under $a_0(980)$ ).

$\Gamma(a_0(980)\pi \text{ [ignoring } a_0(980) \rightarrow K\bar{K}]) / \Gamma(\eta\pi\pi) \quad \Gamma_8/\Gamma_7 = \Gamma_8/(\Gamma_8+\Gamma_9)$

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
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**0.69±0.13 OUR FIT**

**0.69<sup>+0.13</sup><sub>-0.12</sub> OUR AVERAGE**

0.72±0.15			GURTU	79	HBC	4.2 $K^- p$
0.6 <sup>+0.3</sup> <sub>-0.2</sub>			CORDEN	78	OMEG	12-15 $\pi^- p$

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

>0.69	95	318	ACHARD	02B	L3	183-209 $e^+ e^- \rightarrow e^+ e^- \eta \pi^+ \pi^-$
0.28±0.07		1400	ALDE	97B	GAM4	100 $\pi^- p \rightarrow \eta \pi^0 \pi^0 n$
1.0 ±0.3			GRASSLER	77	HBC	16 $\pi^\mp p$

$\Gamma(4\pi) / \Gamma(\eta\pi\pi) \quad \Gamma_1/\Gamma_7 = \Gamma_1/(\Gamma_8+\Gamma_9)$

VALUE	DOCUMENT ID	TECN	COMMENT
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**0.63±0.06 OUR FIT** Error includes scale factor of 1.2.

**0.41±0.14 OUR AVERAGE**

0.37±0.11±0.11	BOLTON	92	MRK3	$J/\psi \rightarrow \gamma f_1(1285)$
0.64±0.40	GURTU	79	HBC	4.2 $K^- p$

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

0.93±0.30	<sup>22</sup> GRASSLER	77	HBC	16 $\pi^\mp p$
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<sup>22</sup> Assuming  $\rho\pi\pi$  and  $a_0(980)\pi$  intermediate states.

$\Gamma(K\bar{K}^*(892)) / \Gamma_{\text{total}} \quad \Gamma_{11}/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
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**not seen** NACASCH 78 HBC 0.7,0.76  $\bar{p}p \rightarrow K\bar{K}3\pi$

$\Gamma(\rho^0\pi^+\pi^-) / \Gamma(2\pi^+2\pi^-) \quad \Gamma_4/\Gamma_3$

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

1.0±0.4	GRASSLER	77	HBC	16 GeV $\pi^\pm p$
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$\Gamma(4\pi^0) / \Gamma_{\text{total}} \quad \Gamma_6/\Gamma$

VALUE (units $10^{-4}$ )	CL%	DOCUMENT ID	TECN	COMMENT
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**<7** 90 ALDE 87 GAM4 100  $\pi^- p \rightarrow 4\pi^0 n$

$\Gamma(\phi\gamma) / \Gamma(K\bar{K}\pi) \quad \Gamma_{13}/\Gamma_{10}$

VALUE (units $10^{-2}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
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**0.82±0.21±0.20** 19 BITYUKOV 88 SPEC 32.5  $\pi^- p \rightarrow K^+ K^- \pi^0 n$

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

<0.50	95		BARBERIS	98C	OMEG 450 $pp \rightarrow p_f f_1(1285) p_s$
<0.93	95		AMELIN	95	VES 37 $\pi^- N \rightarrow \pi^- \pi^+ \pi^- \gamma N$



$\Gamma(\gamma\rho^0)/\Gamma(K\bar{K}\pi)$   $\Gamma_{12}/\Gamma_{10}$

VALUE CL% DOCUMENT ID TECN COMMENT

- • • We do not use the following data for averages, fits, limits, etc. • • •
- >0.035 90 <sup>23</sup> COFFMAN 90 MRK3  $J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
- <sup>23</sup> Using  $B(J/\psi \rightarrow \gamma f_1(1285) \rightarrow \gamma\gamma\rho^0) = 0.25 \times 10^{-4}$  and  $B(J/\psi \rightarrow \gamma f_1(1285) \rightarrow \gamma K\bar{K}\pi) < 0.72 \times 10^{-3}$ .

$\Gamma(\gamma\rho^0)/\Gamma(2\pi^+2\pi^-)$   $\Gamma_{12}/\Gamma_3 = \Gamma_{12}/\frac{1}{3}\Gamma_1$

VALUE DOCUMENT ID TECN COMMENT

- 0.50±0.13 OUR FIT** Error includes scale factor of 2.5.
- 0.45±0.18** <sup>24</sup> COFFMAN 90 MRK3  $J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
- <sup>24</sup> Using  $B(J/\psi \rightarrow \gamma f_1(1285) \rightarrow \gamma\gamma\rho^0) = 0.25 \times 10^{-4}$  and  $B(J/\psi \rightarrow \gamma f_1(1285) \rightarrow \gamma 2\pi^+ 2\pi^-) = 0.55 \times 10^{-4}$  given by MIR 88.

$\Gamma(\gamma\rho^0)/\Gamma_{total}$   $\Gamma_{12}/\Gamma$

VALUE CL% DOCUMENT ID TECN COMMENT

- 0.055±0.013 OUR FIT** Error includes scale factor of 2.8.
- 0.028±0.007±0.006** AMELIN 95 VES  $37 \pi^- N \rightarrow \pi^- \pi^+ \pi^- \gamma N$
- • • We do not use the following data for averages, fits, limits, etc. • • •
- <0.05 95 BITYUKOV 91B SPEC  $32 \pi^- p \rightarrow \pi^+ \pi^- \gamma n$

$\Gamma(\eta\pi\pi)/\Gamma(\gamma\rho^0)$   $\Gamma_7/\Gamma_{12} = (\Gamma_8 + \Gamma_9)/\Gamma_{12}$

VALUE DOCUMENT ID TECN COMMENT

- 9.5±2.0 OUR FIT** Error includes scale factor of 2.5.
- 7.9±0.9 OUR AVERAGE**
- 10.0±1.0±2.0 BARBERIS 98C OMEG 450  $p p \rightarrow p_f f_1(1285) p_s$
- 7.5±1.0 <sup>25</sup> ARMSTRONG 92C OMEG 300  $p p \rightarrow p p \pi^+ \pi^- \gamma, p p \eta \pi^+ \pi^-$

<sup>25</sup> Published value multiplied by 1.5.

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ACCIARRI	01G	PL B501 1	M. Acciarri <i>et al.</i>	(L3 Collab.)
ADAMS	01B	PL B516 264	G.S. Adams <i>et al.</i>	(BNL E852 Collab.)
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