

$f_1(1285)$

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

 $f_1(1285)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1281.9 ± 0.5	OUR AVERAGE	Error includes scale factor of 1.8. See the ideogram below.		
1281.0 ± 0.8		DICKSON	16 CLAS	2.55 $\gamma p \rightarrow \eta \pi^+ \pi^- p$
1287.4 ± 3.0	87	ABLIKIM	15P BES3	$J/\psi \rightarrow K^+ K^- 3\pi$
1281.16 ± 0.39 ± 0.45		¹ LEES	12X BABR	$\tau^- \rightarrow \pi^- f_1(1285) \nu_\tau$
1285.1 ± 1.0 $\begin{smallmatrix} + \\ - \end{smallmatrix}$ $\begin{smallmatrix} 1.6 \\ 0.3 \end{smallmatrix}$		² ABLIKIM	11J BES3	$J/\psi \rightarrow \omega(\eta \pi^+ \pi^-)$
1281 ± 2 ± 1		AUBERT	07AU BABR	10.6 $e^+ e^- \rightarrow f_1(1285) \pi^+ \pi^- \gamma$
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 $pp \rightarrow pp 2(\pi^+ \pi^-)$
1281 ± 1		BARBERIS	97C OMEG	450 $pp \rightarrow pp K_S^0 K^\pm \pi^\mp$
1280 ± 2		³ ANTINORI	95 OMEG	300,450 $pp \rightarrow pp 2(\pi^+ \pi^-)$
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 $\pi^+ p \rightarrow 4\pi \pi p, pp \rightarrow 4\pi pp$
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	⁴ 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 $p\bar{p} \rightarrow K\bar{K}3\pi$
1279 ± 5	210	GRASSLER	77 HBC	16 $\pi^\mp p$
1286 ± 3	180	DUBOC	72 HBC	1.2 $p\bar{p} \rightarrow 2K4\pi$
1283 ± 5		DAHL	67 HBC	1.6–4.2 $\pi^- p$

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

1289.3 ± 2.8	234	ABLIKIM	19BA BES3	$e^+e^- \rightarrow \psi(2S)$
1284.2 ± 2.2		⁵ AAIJ	14Y LHCb	$\bar{B}_{(s)}^0 \rightarrow J/\psi 2(\pi^+\pi^-)$
1281.9 ± 0.5		⁵ SOSA	99 SPEC	$pp \rightarrow p_{\text{slow}}(K_S^0 K^+\pi^-) p_{\text{fast}}$
1282.8 ± 0.6		⁵ 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	$450 pp \rightarrow pp 2(\pi^+\pi^-)$
1282 ± 4		ARMSTRONG	93C E760	$\bar{p}p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
1270 ± 6 ± 10		ARMSTRONG	92C OMEG	$300 pp \rightarrow pp \pi^+\pi^-\gamma$
1281 ± 1		ARMSTRONG	89E OMEG	$300 pp \rightarrow pp 2(\pi^+\pi^-)$
1279 ± 6 ± 10	16	BECKER	87 MRK3	$e^+e^- \rightarrow \phi K \bar{K} \pi$
1286 ± 9		GIDAL	87 MRK2	$e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$
1287 ± 5 ~ 1279	353	BITYUKOV ⁶ TORNQVIST	84B SPEC 82B RVUE	$32 \pi^- p \rightarrow K^+ K^- \pi^0 n$
1275 ± 6	31	BROMBERG	80 SPEC	$100 \pi^- p \rightarrow K \bar{K} \pi X$
1288 ± 9	200	GURTU	79 HBC	$4.2 K^- p \rightarrow n \eta 2\pi$
~ 1275.0	46	⁷ STANTON	79 CNTR	$8.5 \pi^- p \rightarrow n 2\gamma 2\pi$
1271 ± 10	34	CORDEN	78 OMEG	$12-15 \pi^- p \rightarrow K^+ K^- \pi n$
1295 ± 12	85	CORDEN	78 OMEG	$12-15 \pi^- p \rightarrow n 5\pi$
1292 ± 10	150	DEFOIX	72 HBC	$0.7 \bar{p}p \rightarrow 7\pi$
1280 ± 3	500	⁸ THUN	72 MMS	$13.4 \pi^- p$
1303 ± 8		BARDADIN-...	71 HBC	$8 \pi^+ p \rightarrow p 6\pi$
1283 ± 6		BOESEBECK	71 HBC	$16.0 \pi p \rightarrow p 5\pi$
1270 ± 10		CAMPBELL	69 DBC	$2.7 \pi^+ d$
1285 ± 7		LORSTAD	69 HBC	$0.7 \bar{p}p, 4,5\text{-body}$
1290 ± 7		D'ANDLAU	68 HBC	$1.2 \bar{p}p, 5-6\text{ body}$

¹ Using the $2\pi^+2\pi^-$ and $\pi^+\pi^-\eta$ modes of $f_1(1285)$ decay.

² The selected process is $J/\psi \rightarrow \omega a_0(980)\pi$.

³ Supersedes ABATZIS 94, ARMSTRONG 89E.

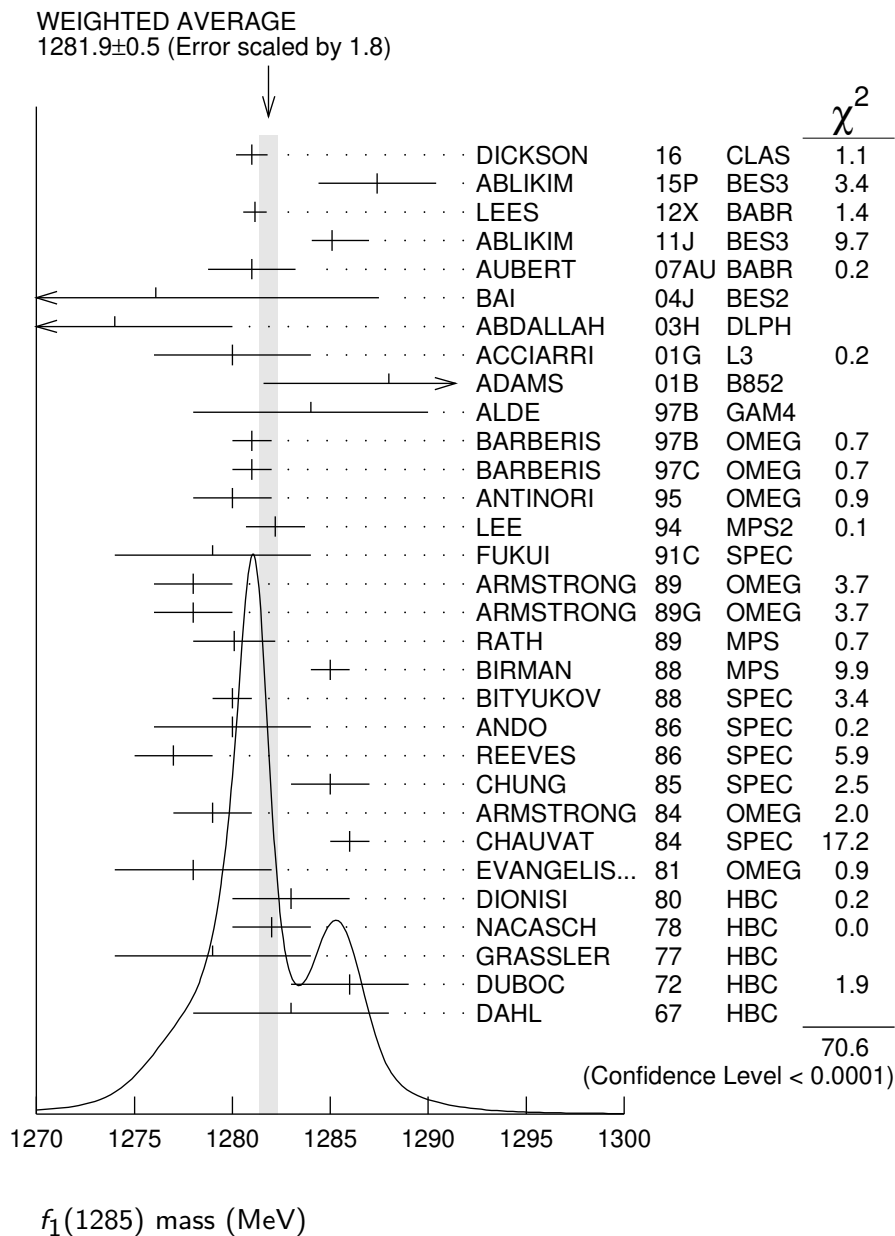
⁴ From partial wave analysis of $K^+ \bar{K}^0 \pi^-$ system.

⁵ No systematic error given.

⁶ From a unitarized quark-model calculation.

⁷ From phase shift analysis of $\eta\pi^+\pi^-$ system.

⁸ 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
22.7 ± 1.1 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.		
18.4 ± 1.4		DICKSON	16 CLAS	2.55 $\gamma p \rightarrow \eta \pi^+ \pi^- p$
18.3 ± 6.3	87	ABLIKIM	15P BES3	$J/\psi \rightarrow K^+ K^- 3\pi$
22.0 ± 3.1 ⁺ _{-1.5}		¹ ABLIKIM	11J BES3	$J/\psi \rightarrow \omega(\eta \pi^+ \pi^-)$
35 ± 6 ± 4		AUBERT	07AU BABR	10.6 $e^+ e^- \rightarrow f_1(1285) \pi^+ \pi^- \gamma$
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		² 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	³ 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	$\bar{p}p \rightarrow K\bar{K}3\pi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●						
17.1 ± 3.4	234	ABLIKIM	19BA	BES3		$e^+e^- \rightarrow \psi(2S)$
32.4 ± 5.8		⁴ AAJ	14Y	LHCB		$\bar{B}_{(s)}^0 \rightarrow J/\psi 2(\pi^+ \pi^-)$
18.2 ± 1.2		⁴ SOSA	99	SPEC		$pp \rightarrow p_{\text{slow}} (K_S^0 K^+ \pi^-)$ p_{fast}
19.4 ± 1.5		⁴ SOSA	99	SPEC		$pp \rightarrow p_{\text{slow}} (K_S^0 K^- \pi^+)$ p_{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 ⁺²⁰ / ₋₁₄ ± 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		⁵ 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	⁶ DEFOIX	72	HBC	0.7	$\bar{p}p \rightarrow 7\pi$
46 ± 9	180	⁶ DUBOC	72	HBC	1.2	$\bar{p}p \rightarrow 2K4\pi$
37 ± 5	500	⁷ 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		⁶ LORSTAD	69	HBC	0.7	$\bar{p}p, 4,5\text{-body}$
35 ± 10		⁶ DAHL	67	HBC	1.6–4.2	$\pi^- p$

¹ The selected process is $J/\psi \rightarrow \omega a_0(980)\pi$.

² Supersedes ABATZIS 94, ARMSTRONG 89E.

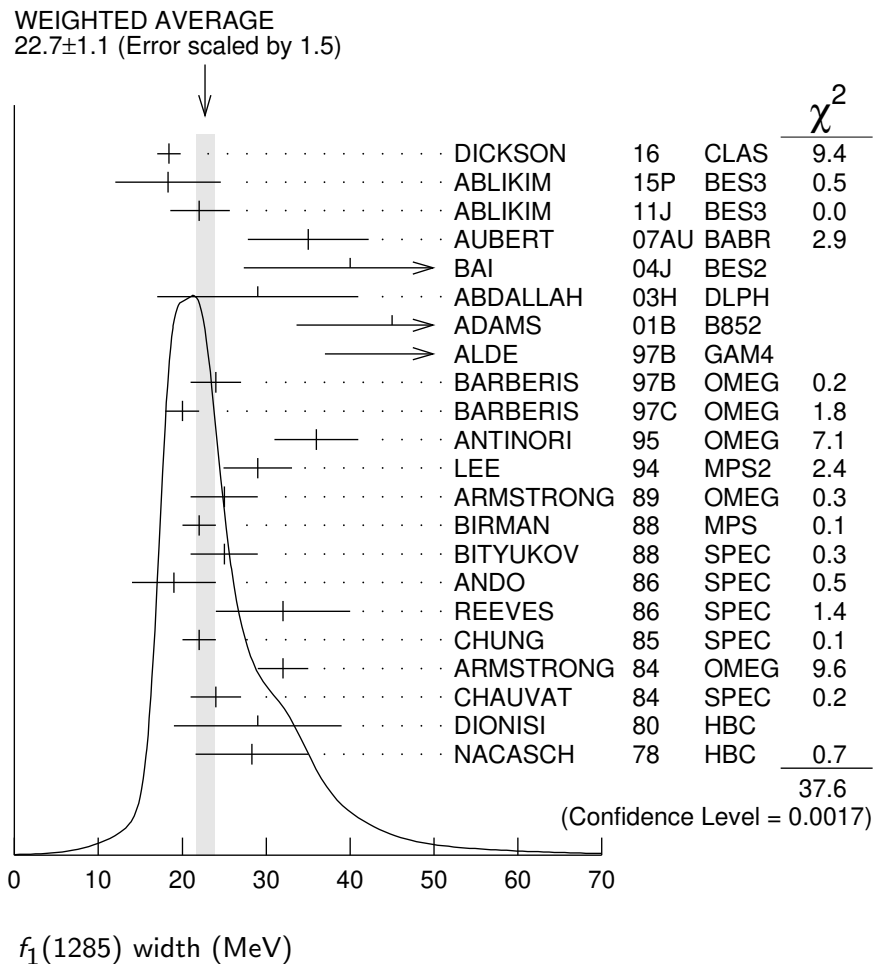
³ From partial wave analysis of $K^+ \bar{K}^0 \pi^-$ system.

⁴ No systematic error given.

⁵ From phase shift analysis of $\eta\pi^+\pi^-$ system.

⁶ Resolution is not unfolded.

⁷ Seen in the missing mass spectrum.



$f_1(1285)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1 4π	$(32.7 \pm 1.9) \%$	S=1.2
Γ_2 $\pi^0\pi^0\pi^+\pi^-$	$(21.8 \pm 1.3) \%$	S=1.2
Γ_3 $2\pi^+2\pi^-$	$(10.9 \pm 0.6) \%$	S=1.2
Γ_4 $\rho^0\pi^+\pi^-$	$(10.9 \pm 0.6) \%$	S=1.2
Γ_5 $\rho^0\rho^0$	seen	
Γ_6 $4\pi^0$	$< 7 \times 10^{-4}$	CL=90%
Γ_7 $\eta\pi^+\pi^-$	$(35 \pm 15) \%$	
Γ_8 $\eta\pi\pi$	$(52.2 \pm 2.0) \%$	S=1.2
Γ_9 $a_0(980)\pi$ [ignoring $a_0(980) \rightarrow K\bar{K}$]	$(38 \pm 4) \%$	

Γ_{10}	$\eta\pi\pi$ [excluding $a_0(980)\pi$]	$(14 \pm 4) \%$	
Γ_{11}	$K\bar{K}\pi$	$(9.0 \pm 0.4) \%$	S=1.1
Γ_{12}	$K\bar{K}^*(892)$	not seen	
Γ_{13}	$\pi^+\pi^-\pi^0$	$(3.0 \pm 0.9) \times 10^{-3}$	
Γ_{14}	$\rho^\pm\pi^\mp$	$< 3.1 \times 10^{-3}$	CL=95%
Γ_{15}	$\gamma\rho^0$	$(6.1 \pm 1.0) \%$	S=1.7
Γ_{16}	$\phi\gamma$	$(7.4 \pm 2.6) \times 10^{-4}$	
Γ_{17}	e^+e^-	$< 9.4 \times 10^{-9}$	CL=90%
Γ_{18}	$\gamma\gamma^*$		
Γ_{19}	$\gamma\gamma$		

CONSTRAINED FIT INFORMATION

An overall fit to 6 branching ratios uses 18 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 24.0$ for 14 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_9	-30			
x_{10}	-12	-88		
x_{11}	22	-10	-4	
x_{15}	-25	-7	-3	-27
	x_1	x_9	x_{10}	x_{11}

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

$\Gamma(\eta\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$		$\Gamma_8\Gamma_{19}/\Gamma = (\Gamma_9+\Gamma_{10})\Gamma_{19}/\Gamma$		
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT
<0.62	95	GIDAL	87	MRK2 $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$

$\Gamma(\eta\pi\pi) \times \Gamma(\gamma\gamma^*)/\Gamma_{\text{total}}$		$\Gamma_8\Gamma_{18}/\Gamma = (\Gamma_9+\Gamma_{10})\Gamma_{18}/\Gamma$		
VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
1.4 ± 0.4 OUR AVERAGE		Error includes scale factor of 1.4.		
1.18 ± 0.25 ± 0.20	26	^{1,2} AIHARA	88B	TPC $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$
2.30 ± 0.61 ± 0.42		^{1,3} 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	⁴ ACHARD	02B	L3 183–209 $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$

¹ Assuming a ρ -pole form factor.

² Published value multiplied by $\eta\pi\pi$ branching ratio 0.49.

³ Published value divided by 2 and multiplied by the $\eta\pi\pi$ branching ratio 0.49.

⁴ Published value multiplied by the $\eta\pi\pi$ branching ratio 0.52.

$f_1(1285)$ BRANCHING RATIOS

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

Γ_{11}/Γ_1

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.274±0.017 OUR FIT			Error includes scale factor of 1.4.
0.271±0.016 OUR AVERAGE			Error includes scale factor of 1.2.
0.265±0.014	¹ BARBERIS	97C	OMEG 450 $pp \rightarrow p\rho K_S^0 K^\pm \pi^\mp$
0.28 ±0.05	² ARMSTRONG	89E	OMEG 300 $pp \rightarrow p\rho f_1(1285)$
0.37 ±0.03 ±0.05	³ ARMSTRONG	89G	OMEG 85 $\pi p \rightarrow 4\pi X$

¹ Using $2(\pi^+ \pi^-)$ data from BARBERIS 97B.

² Assuming $\rho\pi\pi$ and $a_0(980)\pi$ intermediate states.

³ 4π 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>
0.218±0.013 OUR FIT	Error includes scale factor of 1.2.

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

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

<u>VALUE</u>	<u>DOCUMENT ID</u>
0.109±0.006 OUR FIT	Error includes scale factor of 1.2.

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

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

<u>VALUE</u>	<u>DOCUMENT ID</u>
0.109±0.006 OUR FIT	Error includes scale factor of 1.2.

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

Γ_4/Γ_3

<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. • • •			
1.0±0.4	GRASSLER	77	HBC 16 GeV $\pi^\pm p$

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

Γ_5/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>COMMENT</u>
seen	BARBERIS	00C 450 $pp \rightarrow p_f 4\pi p_s$

$\Gamma(4\pi^0)/\Gamma_{\text{total}}$

Γ_6/Γ

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

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

Γ_{13}/Γ_7

<u>VALUE (%)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.86±0.16±0.20	2.3k	¹ DOROFEEV	11	VES $\pi^- N \rightarrow \pi^- f_1(1285) N$

¹ Value obtained selecting the region corresponding to $f_0(980)$ in the $\pi^+ \pi^-$ mass spectrum.

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

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

<u>VALUE</u>	<u>DOCUMENT ID</u>
0.522±0.020 OUR FIT	Error includes scale factor of 1.2.

$\Gamma(4\pi)/\Gamma(\eta\pi\pi)$ $\Gamma_1/\Gamma_8 = \Gamma_1/(\Gamma_9+\Gamma_{10})$

VALUE	DOCUMENT ID	TECN	COMMENT
0.63±0.06 OUR FIT	Error includes scale factor of 1.3.		
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	¹ GRASSLER	77	HBC 16 $\pi^\mp p$
¹ Assuming $\rho\pi\pi$ and $a_0(980)\pi$ intermediate states.			

$\Gamma(2\pi^+2\pi^-)/\Gamma(\eta\pi\pi)$ Γ_3/Γ_8

VALUE	DOCUMENT ID	TECN	COMMENT
0.28±0.02±0.02	¹ LEES	12X	BABR $\tau^- \rightarrow \pi^- f_1(1285)\nu_\tau$
¹ Assuming $B(f_1(1285) \rightarrow \pi\pi\eta) = 3/2 B(f_1(1285) \rightarrow \pi^+\pi^-\eta)$.			

$\Gamma(a_0(980)\pi [\text{ignoring } a_0(980) \rightarrow K\bar{K}])/ \Gamma(\eta\pi\pi)$ $\Gamma_9/\Gamma_8 = \Gamma_9/(\Gamma_9+\Gamma_{10})$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
0.72±0.08 OUR FIT				
0.72±0.07 OUR AVERAGE				
0.74±0.02±0.09		DICKSON	16	CLAS $\gamma p \rightarrow f_1(1285)p$
0.72±0.15		GURTU	79	HBC 4.2 $K^- p$
0.6 ^{+0.3} / _{-0.2}		CORDEN	78	OMEG 12–15 $\pi^- p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
>0.69	95	ACHARD	02B	L3 183–209 $e^+e^- \rightarrow e^+e^-\eta\pi^+\pi^-$
0.28±0.07		ALDE	97B	GAM4 100 $\pi^- p \rightarrow \eta\pi^0\pi^0 n$
1.0 ±0.3		GRASSLER	77	HBC 16 $\pi^\mp p$

$\Gamma(K\bar{K}\pi)/\Gamma(\eta\pi\pi)$ $\Gamma_{11}/\Gamma_8 = \Gamma_{11}/(\Gamma_9+\Gamma_{10})$

VALUE	DOCUMENT ID	TECN	COMMENT
0.172±0.012 OUR FIT	Error includes scale factor of 1.1.		
0.176±0.012 OUR AVERAGE			
0.216±0.010±0.031	DICKSON	16	CLAS $\gamma p \rightarrow f_1(1285)p$
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	¹ CORDEN	78	OMEG 12–15 $\pi^- p$
0.20 ±0.08	² DEFOIX	72	HBC 0.7 $\bar{p}p \rightarrow 7\pi$
0.16 ±0.08	CAMPBELL	69	DBC 2.7 $\pi^+ d$

¹ CORDEN 78 assumes low-mass $\eta\pi\pi$ region is dominantly 1^{++} . See BARBERIS 98c and MANAK 00A for discussion.

² $K\bar{K}$ system characterized by the $l = 1$ threshold enhancement. (See under $a_0(980)$).

$\Gamma(K\bar{K}^*(892))/\Gamma_{\text{total}}$ Γ_{12}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
not seen	NACASCH	78	HBC 0.7,0.76 $\bar{p}p \rightarrow K\bar{K}3\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
seen	¹ ACHARD	07	L3 183–209 $e^+e^- \rightarrow e^+e^-K_S^0 K^\pm\pi^\mp$

¹ A clear signal of 19.8 ± 4.4 events observed at high Q^2 .

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$ Γ_{13}/Γ

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
0.30±0.055±0.074	2.3k	¹ DOROFEEV 11	VES	$\pi^- N \rightarrow \pi^- f_1(1285) N$

¹ Value obtained selecting the region corresponding to $f_0(980)$ in the $\pi^+\pi^-$ mass spectrum. The systematic error includes the uncertainty on the partial width $f_1 \rightarrow \eta\pi\pi$ obtained from PDG 10 data.

$\Gamma(\rho^\pm\pi^\mp)/\Gamma_{\text{total}}$ Γ_{14}/Γ

VALUE (%)	CL%	DOCUMENT ID	TECN	COMMENT
<0.31	95	DOROFEEV 11	VES	$\pi^- N \rightarrow \pi^- f_1(1285) N$

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

VALUE (units 10^{-2})	CL%	DOCUMENT ID	TECN	COMMENT
6.1±1.0 OUR FIT				Error includes scale factor of 1.7.

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

$2.8\pm 0.7\pm 0.6$		¹ AMELIN 95	VES	$37 \pi^- N \rightarrow \pi^- \pi^+ \pi^- \gamma N$
<5	95	BITYUKOV 91B	SPEC	$32 \pi^- p \rightarrow \pi^+ \pi^- \gamma n$

¹ Not an independent measurement.

$\Gamma(\gamma\rho^0)/\Gamma(2\pi^+2\pi^-)$ $\Gamma_{15}/\Gamma_3 = \Gamma_{15}/\frac{1}{3}\Gamma_1$

VALUE	DOCUMENT ID	TECN	COMMENT
0.55±0.10 OUR FIT			Error includes scale factor of 1.5.
0.45±0.18	¹ COFFMAN 90	MRK3	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$

¹ 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.

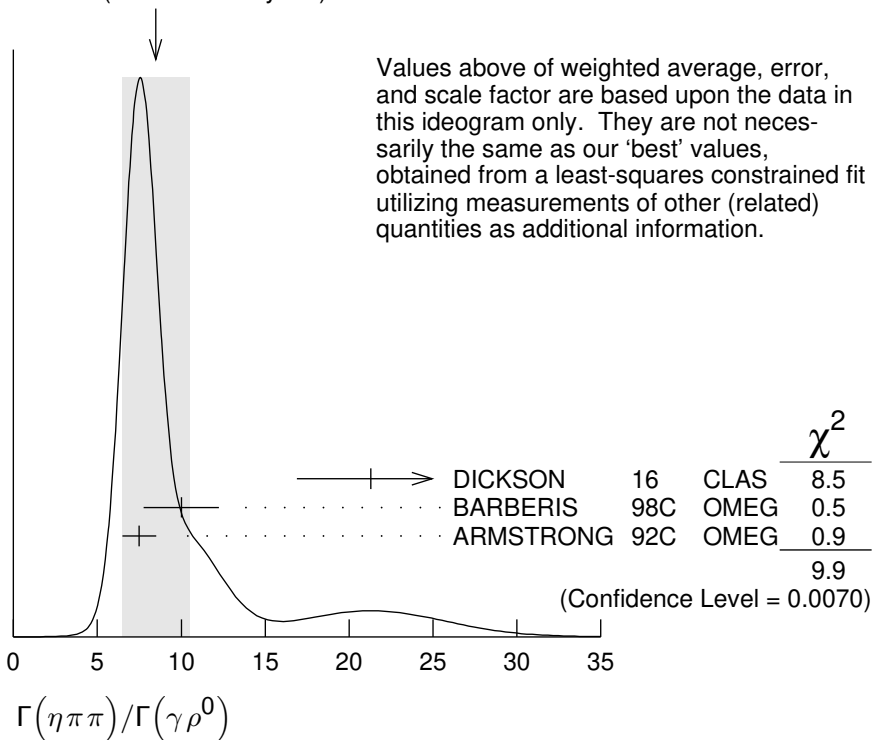
$\Gamma(\eta\pi\pi)/\Gamma(\gamma\rho^0)$ $\Gamma_8/\Gamma_{15} = (\Gamma_9 + \Gamma_{10})/\Gamma_{15}$

VALUE	DOCUMENT ID	TECN	COMMENT
8.6±1.6 OUR FIT			Error includes scale factor of 1.9.
8.5±2.0 OUR AVERAGE			Error includes scale factor of 2.2. See the ideogram below.

21.3 ± 4.4	DICKSON 16	CLAS	$\gamma p \rightarrow f_1(1285) p$
$10.0\pm 1.0\pm 2.0$	BARBERIS 98C	OMEG 450	$pp \rightarrow p_f f_1(1285) p_s$
7.5 ± 1.0	¹ ARMSTRONG 92C	OMEG 300	$pp \rightarrow pp\pi^+\pi^-\gamma, pp\eta\pi^+\pi^-$

¹ Published value multiplied by 1.5.

WEIGHTED AVERAGE
8.5±2.0 (Error scaled by 2.2)



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

Γ_{15}/Γ_{11}

VALUE CL% DOCUMENT ID TECN COMMENT

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

>0.035 90 ¹ COFFMAN 90 MRK3 $J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$

¹ Using $B(J/\psi \rightarrow \gamma f_1(1285) \rightarrow \gamma\gamma\rho^0) = 0.25 \times 10^{-4}$ and $B(J/\psi \rightarrow \gamma f_1(1285) \rightarrow \gamma K\bar{K}\pi) < 0.72 \times 10^{-3}$.

$\Gamma(\phi\gamma)/\Gamma(K\bar{K}\pi)$

Γ_{16}/Γ_{11}

VALUE (units 10^{-2}) CL% EVTS DOCUMENT ID TECN COMMENT

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 $450 p p \rightarrow p_f f_1(1285) p_s$

<0.93 95 AMELIN 95 VES $37 \pi^- N \rightarrow \pi^- \pi^+ \pi^- \gamma N$

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

Γ_{17}/Γ

VALUE CL% DOCUMENT ID TECN COMMENT

<9.4 × 10⁻⁹ 90 ¹ ACHASOV 20 SND $e^+e^- \rightarrow \eta\pi^0\pi^0$

¹ ACHASOV 20 reports two candidate events corresponding to a significance of 2.5 σ and the branching fraction of $(5.1^{+3.7}_{-2.7}) \times 10^{-9}$.

$f_1(1285)$ REFERENCES

- ACHASOV 20 PL B800 135074 M.N. Achasov *et al.* (SND Collab.)
 ABLIKIM 19BA PR D100 092003 M. Ablikim *et al.* (BESIII Collab.)
 DICKSON 16 PR C93 065202 R. Dickson *et al.* (JLab CLAS Collab.)
 ABLIKIM 15P PR D92 012007 M. Ablikim *et al.* (BESIII Collab.)
 AAIJ 14Y PRL 112 091802 R. Aaij *et al.* (LHCb Collab.)
 LEES 12X PR D86 092010 J.P. Lees *et al.* (BABAR Collab.)
 ABLIKIM 11J PRL 107 182001 M. Ablikim *et al.* (BESIII Collab.)
 DOROFEEV 11 EPJ A47 68 V. Dorofeev *et al.* (SERP, MIPT)
 PDG 10 JP G37 075021 K. Nakamura *et al.* (PDG Collab.)
 ACHARD 07 JHEP 0703 018 P. Achard *et al.* (L3 Collab.)
 AUBERT 07AU PR D76 092005 B. Aubert *et al.* (BABAR Collab.)
 BAI 04J PL B594 47 J.Z. Bai *et al.* (BES Collab.)
 ABDALLAH 03H PL B569 129 J. Abdallah *et al.* (DELPHI Collab.)
 ACHARD 02B PL B526 269 P. Achard *et al.* (L3 Collab.)
 ACCIARRI 01G PL B501 1 M. Acciarri *et al.* (L3 Collab.)
 ADAMS 01B PL B516 264 G.S. Adams *et al.* (BNL E852 Collab.)
 BARBERIS 00C PL B471 440 D. Barberis *et al.* (WA 102 Collab.)
 MANAK 00A PR D62 012003 J.J. Manak *et al.* (BNL E852 Collab.)
 SOSA 99 PRL 83 913 M. Sosa *et al.*
 BARBERIS 98C PL B440 225 D. Barberis *et al.* (WA 102 Collab.)
 ALDE 97B PAN 60 386 D. Alde *et al.* (GAMS Collab.)
 Translated from YAF 60 458.
 BARBERIS 97B PL B413 217 D. Barberis *et al.* (WA 102 Collab.)
 BARBERIS 97C PL B413 225 D. Barberis *et al.* (WA 102 Collab.)
 AMELIN 95 ZPHY C66 71 D.V. Amelin *et al.* (VES Collab.)
 ANTINORI 95 PL B353 589 F. Antinori *et al.* (ATHU, BARI, BIRM+)
 ABATZIS 94 PL B324 509 S. Abatzis *et al.* (ATHU, BARI, BIRM+)
 LEE 94 PL B323 227 J.H. Lee *et al.* (BNL, IND, KYUN, MASD+)
 ARMSTRONG 93C PL B307 394 T.A. Armstrong *et al.* (FNAL, FERR, GENO+)
 ARMSTRONG 92C ZPHY C54 371 T.A. Armstrong *et al.* (ATHU, BARI, BIRM+)
 BOLTON 92 PL B278 495 T. Bolton *et al.* (Mark III Collab.)
 BITYUKOV 91B SJNP 54 318 S.I. Bitiyukov *et al.* (SERP)
 Translated from YAF 54 529.
 FUKUI 91C PL B267 293 S. Fukui *et al.* (SUGI, NAGO, KEK, KYOT+)
 COFFMAN 90 PR D41 1410 D.M. Coffman *et al.* (Mark III Collab.)
 ARMSTRONG 89 PL B221 216 T.A. Armstrong *et al.* (CERN, CDEF, BIRM+) JPC
 ARMSTRONG 89E PL B228 536 T.A. Armstrong, M. Benayoun (ATHU, BARI, BIRM+)
 ARMSTRONG 89G ZPHY C43 55 T.A. Armstrong *et al.* (CERN, BIRM, BARI+)
 RATH 89 PR D40 693 M.G. Rath *et al.* (NDAM, BRAN, BNL, CUNY+)
 AIHARA 88B PL B209 107 H. Aihara *et al.* (TPC-2 γ Collab.)
 BIRMAN 88 PRL 61 1557 A. Birman *et al.* (BNL, FSU, IND, MASD) JP
 BITYUKOV 88 PL B203 327 S.I. Bitiyukov *et al.* (SERP)
 MIR 88 Photon-Photon 88, 126 R. Mir (Mark III Collab.)
 Conference
 ALDE 87 PL B198 286 D.M. Alde *et al.* (LANL, BRUX, SERP, LAPP)
 BECKER 87 PRL 59 186 J.J. Becker *et al.* (Mark III Collab.)
 GIDAL 87 PRL 59 2012 G. Gidal *et al.* (LBL, SLAC, HARV)
 ANDO 86 PRL 57 1296 A. Ando *et al.* (KEK, KYOT, NIRS, SAGA+) IJP
 REEVES 86 PR D34 1960 D.F. Reeves *et al.* (FLOR, BNL, IND+) JP
 CHUNG 85 PRL 55 779 S.U. Chung *et al.* (BNL, FLOR, IND+) JP
 ARMSTRONG 84 PL 146B 273 T.A. Armstrong *et al.* (ATHU, BARI, BIRM+) JP
 BITYUKOV 84B PL 144B 133 S.I. Bitiyukov *et al.* (SERP)
 CHAUVAT 84 PL 148B 382 P. Chauvat *et al.* (CERN, CLER, UCLA+)
 TORNVIST 82B NP B203 268 N.A. Tornqvist (HELS)
 EVANGELIS... 81 NP B178 197 C. Evangelista *et al.* (BARI, BONN, CERN+)
 BROMBERG 80 PR D22 1513 C.M. Bromberg *et al.* (CIT, FNAL, ILLC+)
 DIONISI 80 NP B169 1 C. Dionisi *et al.* (CERN, MADR, CDEF+)
 GURTU 79 NP B151 181 A. Gurtu *et al.* (CERN, ZEEM, NIJM, OXF)
 STANTON 79 PRL 42 346 N.R. Stanton *et al.* (OSU, CARL, MCGI+) JP
 CORDEN 78 NP B144 253 M.J. Corden *et al.* (BIRM, RHEL, TELA+) JP
 NACASCH 78 NP B135 203 R. Nacasch *et al.* (PARIS, MADR, CERN)
 GRASSLER 77 NP B121 189 H. Grassler *et al.* (AACH3, BERL, BONN+)
 DEFOIX 72 NP B44 125 C. Defoix *et al.* (CDEF, CERN)
 DUBOC 72 NP B46 429 J. Duboc *et al.* (PARIS, LIVP)
 THUN 72 PRL 28 1733 R. Thun *et al.* (STON, NEAS)
 BARDADIN-... 71 PR D4 2711 M. Bardadin-Otwinowska *et al.* (WARS)
 BOESEBECK 71 PL 34B 659 K. Boesebeck (AACH, BERL, BONN, CERN, CRAC+)
 CAMPBELL 69 PRL 22 1204 J.H. Campbell *et al.* (PURD)

LORSTAD	69	NP B14 63	B. Lorstad <i>et al.</i>	(CDEF, CERN) JP
D'ANDLAU	68	NP B5 693	C. d'Andlau <i>et al.</i>	(CDEF, CERN, IRAD+) IJP
DAHL	67	PR 163 1377	O.I. Dahl <i>et al.</i>	(LRL) IJP
