$f_0(1500)$

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

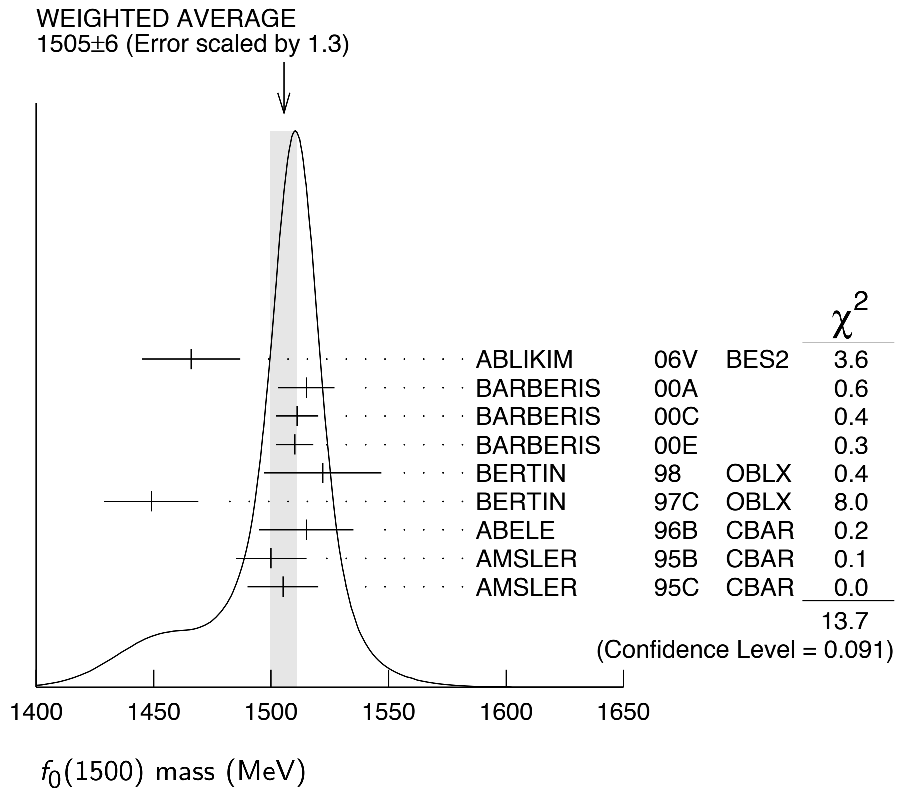
See also the mini-reviews on scalar mesons under $f_0(600)$ (see the index for the page number) and on non-$q\overline{q}$ candidates in PDG 06, Journal of Physics, G **33** 1 (2006).

$f_0(1500)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1505± 6 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.			
1466± 6± 20		ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$
1515±12		[1] BARBERIS	00A		450 $pp \to p_f \eta\eta p_s$
1511± 9		[1,2] BARBERIS	00C		450 $pp \to p_f 4\pi p_s$
1510± 8		[1] BARBERIS	00E		450 $pp \to p_f \eta\eta p_s$
1522±25		BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \to \pi^+\pi^+\pi^-$
1449±20		[1] BERTIN	97C	OBLX	0.0 $\overline{p}p \to \pi^+\pi^-\pi^0$
1515±20		ABELE	96B	CBAR	0.0 $\overline{p}p \to \pi^0 K^0_L K^0_L$
1500±15		[3] AMSLER	95B	CBAR	0.0 $\overline{p}p \to 3\pi^0$
1505±15		[4] AMSLER	95C	CBAR	0.0 $\overline{p}p \to \eta\eta\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1486±10		[1] ANISOVICH	09	RVUE	0.0 $\overline{p}p$, πN
1470±60	568	[5] KLEMPT	08	E791	$D^+_s \to \pi^-\pi^+\pi^+$
$1470^{+\ 6}_{-\ 7}{}^{+\ 72}_{-255}$		[6] UEHARA	08A	BELL	10.6 $e^+e^- \to e^+e^-\pi^0\pi^0$
1495± 4		AMSLER	06	CBAR	0.9 $\overline{p}p \to K^+K^-\pi^0$
1539±20	9.9k	AUBERT	06O	BABR	$B^+ \to K^+K^+K^-$
1473± 5	80k	[7,8] UMAN	06	E835	5.2 $\overline{p}p \to \eta\eta\pi^0$
1478± 6		VLADIMIRSK...	06	SPEC	40 $\pi^-p \to K^0_S K^0_S n$
1493± 7		[7] BINON	05	GAMS	33 $\pi^-p \to \eta\eta n$
1524±14	1400	[9] GARMASH	05	BELL	$B^+ \to K^+K^+K^-$
$1489^{+\ 8}_{-\ 4}$		[10] ANISOVICH	03	RVUE	
1490±30		[7] ABELE	01	CBAR	0.0 $\overline{p}d \to \pi^- 4\pi^0 p$
1497±10		[7] BARBERIS	99	OMEG	450 $pp \to p_s p_f K^+K^-$
1502±10		[7] BARBERIS	99B	OMEG	450 $pp \to p_s p_f \pi^+\pi^-$
1502±12± 10		[11] BARBERIS	99D	OMEG	450 $pp \to K^+K^-$, $\pi^+\pi^-$
1530±45		[7] BELLAZZINI	99	GAM4	450 $pp \to pp\pi^0\pi^0$
1505±18		[7] FRENCH	99		300 $pp \to p_f(K^+K^-)p_s$
1447±27		[12] KAMINSKI	99	RVUE	$\pi\pi \to \pi\pi$, $K\overline{K}$, $\sigma\sigma$
1580±80		[7] ALDE	98	GAM4	100 $\pi^-p \to \pi^0\pi^0 n$
1499± 8		[1] ANISOVICH	98B	RVUE	Compilation
∼ 1520		REYES	98	SPEC	800 $pp \to p_s p_f K^0_S K^0_S$
1510±20		[1] BARBERIS	97B	OMEG	450 $pp \to pp2(\pi^+\pi^-)$
∼ 1475		FRABETTI	97D	E687	$D^\pm_s \to \pi^\mp\pi^\pm\pi^\pm$
∼ 1505		ABELE	96	CBAR	0.0 $\overline{p}p \to 5\pi^0$
1500± 8		[1] ABELE	96C	RVUE	Compilation
1460±20	120	[7] AMELIN	96B	VES	37 $\pi^-A \to \eta\eta\pi^-A$

1500 ± 8		BUGG	96	RVUE	
1500 ± 10		[13] AMSLER	95D	CBAR	$0.0\ \overline{p}p \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
1445 ± 5		[14] ANTINORI	95	OMEG	$300,450\ pp \rightarrow pp2(\pi^+\pi^-)$
1497 ± 30		[7] ANTINORI	95	OMEG	$300,450\ pp \rightarrow pp\pi^+\pi^-$
~ 1505		BUGG	95	MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
1446 ± 5		[7] ABATZIS	94	OMEG	$450\ pp \rightarrow pp2(\pi^+\pi^-)$
1545 ± 25		[7] AMSLER	94E	CBAR	$0.0\ \overline{p}p \rightarrow \pi^0\eta\eta'$
1520 ± 25		[1,15] ANISOVICH	94	CBAR	$0.0\ \overline{p}p \rightarrow 3\pi^0, \pi^0\eta\eta$
1505 ± 20		[1,16] BUGG	94	RVUE	$\overline{p}p \rightarrow 3\pi^0$, $\eta\eta\pi^0$, $\eta\pi^0\pi^0$
1560 ± 25		[7] AMSLER	92	CBAR	$0.0\ \overline{p}p \rightarrow \pi^0\eta\eta$
$1550 \pm 45 \pm 30$		[7] BELADIDZE	92C	VES	$36\ \pi^-\mathrm{Be} \rightarrow \pi^-\eta'\eta\mathrm{Be}$
1449 ± 4		[7] ARMSTRONG	89E	OMEG	$300\ pp \rightarrow pp2(\pi^+\pi^-)$
1610 ± 20		[7] ALDE	88	GAM4	$300\ \pi^- N \rightarrow \pi^- N 2\eta$
~ 1525		ASTON	88D	LASS	$11\ K^- p \rightarrow K^0_S K^0_S \Lambda$
1570 ± 20	600	[7] ALDE	87	GAM4	$100\ \pi^- p \rightarrow 4\pi^0 n$
1575 ± 45		[17] ALDE	86D	GAM4	$100\ \pi^- p \rightarrow 2\eta n$
1568 ± 33		[7] BINON	84C	GAM2	$38\ \pi^- p \rightarrow \eta\eta' n$
1592 ± 25		[7] BINON	83	GAM2	$38\ \pi^- p \rightarrow 2\eta n$
1525 ± 5		[7] GRAY	83	DBC	$0.0\ \overline{p}N \rightarrow 3\pi$

[1] T-matrix pole.
[2] Average between $\pi^+\pi^-2\pi^0$ and $2(\pi^+\pi^-)$.
[3] T-matrix pole, supersedes ANISOVICH 94.
[4] T-matrix pole, supersedes ANISOVICH 94 and AMSLER 92.
[5] Reanalysis of AITALA 01A data. This state could also be $f_0(1370)$.
[6] Breit-Wigner mass. May also be the $f_0(1370)$.
[7] Breit-Wigner mass.
[8] Statistical error only.
[9] Breit-Wigner, solution 1, PWA ambiguous.
[10] K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0\pi^0 n$, $\pi^- p \rightarrow K\overline{K}n$, $\pi^+\pi^- \rightarrow \pi^+\pi^-$, $\overline{p}p \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$, $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, $K^0_S K^0_S\pi^0$, $K^+K^0_S\pi^-$ at rest, $\overline{p}n \rightarrow \pi^-\pi^-\pi^+$, $K^0_S K^-\pi^0$, $K^0_S K^0_S \pi^-$ at rest.
[11] Supersedes BARBERIS 99 and BARBERIS 99B.
[12] T-matrix pole on sheet $--+$.
[13] T-matrix pole. Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[14] Supersedes ABATZIS 94, ARMSTRONG 89E. Breit-Wigner mass.
[15] From a simultaneous analysis of the annihilations $\overline{p}p \rightarrow 3\pi^0, \pi^0\eta\eta$.
[16] Reanalysis of ANISOVICH 94 data.
[17] From central value and spread of two solutions. Breit-Wigner mass.



$f_0(1500)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
109± 7 OUR AVERAGE					
$108^{+14}_{-11}\pm25$		ABLIKIM	06V	BES2	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
110± 24		[18] BARBERIS	00A		$450\ pp \rightarrow p_f\eta\eta p_s$
102± 18		[18,19] BARBERIS	00C		$450\ pp \rightarrow p_f 4\pi p_s$
110± 16		[18] BARBERIS	00E		$450\ pp \rightarrow p_f\eta\eta p_s$
108± 33		BERTIN	98	OBLX	$0.05–0.405\ \overline{n}p \rightarrow \pi^+\pi^+\pi^-$
114± 30		[18] BERTIN	97C	OBLX	$0.0\ \overline{p}p \rightarrow \pi^+\pi^-\pi^0$
105± 15		ABELE	96B	CBAR	$0.0\ \overline{p}p \rightarrow \pi^0 K^0_L K^0_L$
120± 25		[20] AMSLER	95B	CBAR	$0.0\ \overline{p}p \rightarrow 3\pi^0$
120± 30		[21] AMSLER	95C	CBAR	$0.0\ \overline{p}p \rightarrow \eta\eta\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
114± 10		[18] ANISOVICH	09	RVUE	$0.0\ \overline{p}p,\ \pi N$
90^{+2+50}_{-1-22}		[22] UEHARA	08A	BELL	$10.6\ e^+e^- \rightarrow e^+e^-\pi^0\pi^0$
121± 8		AMSLER	06	CBAR	$0.9\ \overline{p}p \rightarrow K^+K^-\pi^0$
257± 33	9.9k	AUBERT	06O	BABR	$B^+ \rightarrow K^+K^+K^-$
108± 9	80k	[23,24] UMAN	06	E835	$5.2\ \overline{p}p \rightarrow \eta\eta\pi^0$
119± 10		VLADIMIRSK...	06	SPEC	$40\ \pi^-p \rightarrow K^0_S K^0_S n$
90± 15		[23] BINON	05	GAMS	$33\ \pi^-p \rightarrow \eta\eta n$
136± 23	1400	[25] GARMASH	05	BELL	$B^+ \rightarrow K^+K^+K^-$
102± 10		[26] ANISOVICH	03	RVUE	
140± 40		[23] ABELE	01	CBAR	$0.0\ \overline{p}d \rightarrow \pi^- 4\pi^0 p$

104 ± 25		[23] BARBERIS	99	OMEG	450 $pp \to p_s p_f K^+ K^-$
131 ± 15		[23] BARBERIS	99B	OMEG	450 $pp \to p_s p_f \pi^+ \pi^-$
$98 \pm 18 \pm 16$		[27] BARBERIS	99D	OMEG	450 $pp \to K^+ K^-$, $\pi^+ \pi^-$
160 ± 50		[23] BELLAZZINI	99	GAM4	450 $pp \to pp \pi^0 \pi^0$
100 ± 33		[23] FRENCH	99		300 $pp \to p_f (K^+ K^-) p_s$
108 ± 46		[28] KAMINSKI	99	RVUE	$\pi\pi \to \pi\pi$, $K\overline{K}$, $\sigma\sigma$
280 ± 100		[23] ALDE	98	GAM4	100 $\pi^- p \to \pi^0 \pi^0 n$
130 ± 20		[18] ANISOVICH	98B	RVUE	Compilation
120 ± 35		[18] BARBERIS	97B	OMEG	450 $pp \to pp 2(\pi^+ \pi^-)$
~ 100		FRABETTI	97D	E687	$D_s^{\pm} \to \pi^{\mp} \pi^{\pm} \pi^{\pm}$
~ 169		ABELE	96	CBAR	0.0 $\overline{p}p \to 5\pi^0$
100 ± 30	120	[23] AMELIN	96B	VES	37 $\pi^- A \to \eta\eta\pi^- A$
132 ± 15		BUGG	96	RVUE	
154 ± 30		[29] AMSLER	95D	CBAR	0.0 $\overline{p}p \to \pi^0 \pi^0 \pi^0$, $\pi^0 \eta\eta$, $\pi^0 \pi^0 \eta$
65 ± 10		[30] ANTINORI	95	OMEG	300,450 $pp \to pp 2(\pi^+ \pi^-)$
199 ± 30		[23] ANTINORI	95	OMEG	300,450 $pp \to pp \pi^+ \pi^-$
56 ± 12		[23] ABATZIS	94	OMEG	450 $pp \to pp 2(\pi^+ \pi^-)$
100 ± 40		[23] AMSLER	94E	CBAR	0.0 $\overline{p}p \to \pi^0 \eta\eta'$
148^{+20}_{-25}		[18,31] ANISOVICH	94	CBAR	0.0 $\overline{p}p \to 3\pi^0, \pi^0 \eta\eta$
150 ± 20		[18,32] BUGG	94	RVUE	$\overline{p}p \to 3\pi^0$, $\eta\eta\pi^0$, $\eta\pi^0\pi^0$
245 ± 50		[23] AMSLER	92	CBAR	0.0 $\overline{p}p \to \pi^0 \eta\eta$
$153 \pm 67 \pm 50$		[23] BELADIDZE	92C	VES	36 π^- Be $\to \pi^- \eta' \eta$ Be
78 ± 18		[23] ARMSTRONG	89E	OMEG	300 $pp \to pp 2(\pi^+ \pi^-)$
170 ± 40		[23] ALDE	88	GAM4	300 $\pi^- N \to \pi^- N 2\eta$
150 ± 20	600	[23] ALDE	87	GAM4	100 $\pi^- p \to 4\pi^0 n$
265 ± 65		[33] ALDE	86D	GAM4	100 $\pi^- p \to 2\eta n$
260 ± 60		[23] BINON	84C	GAM2	38 $\pi^- p \to \eta\eta' n$
210 ± 40		[23] BINON	83	GAM2	38 $\pi^- p \to 2\eta n$
101 ± 13		[23] GRAY	83	DBC	0.0 $\overline{p}N \to 3\pi$

[18] T-matrix pole.
[19] Average between $\pi^+ \pi^- 2\pi^0$ and $2(\pi^+ \pi^-)$.
[20] T-matrix pole, supersedes ANISOVICH 94.
[21] T-matrix pole, supersedes ANISOVICH 94 and AMSLER 92.
[22] Breit-Wigner width. May also be the $f_0(1370)$.
[23] Breit-Wigner width.
[24] Statistical error only.
[25] Breit-Wigner, solution 1, PWA ambiguous.
[26] K-matrix pole from combined analysis of $\pi^- p \to \pi^0 \pi^0 n$, $\pi^- p \to K\overline{K} n$, $\pi^+ \pi^- \to \pi^+ \pi^-$, $\overline{p}p \to \pi^0 \pi^0 \pi^0$, $\pi^0 \eta\eta$, $\pi^0 \pi^0 \eta$, $\pi^+ \pi^- \pi^0$, $K^+ K^- \pi^0$, $K^0_S K^0_S \pi^0$, $K^+ K^0_S \pi^-$ at rest, $\overline{p}n \to \pi^- \pi^- \pi^+$, $K^0_S K^- \pi^0$, $K^0_S K^0_S \pi^-$ at rest.
[27] Supersedes BARBERIS 99 and BARBERIS 99B.
[28] T-matrix pole on sheet $- - +$.
[29] T-matrix pole. Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[30] Supersedes ABATZIS 94, ARMSTRONG 89E. Breit-Wigner mass.
[31] From a simultaneous analysis of the annihilations $\overline{p}p \to 3\pi^0, \pi^0 \eta\eta$.
[32] Reanalysis of ANISOVICH 94 data.
[33] From central value and spread of two solutions. Breit-Wigner mass.

$f_0(1500)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor
Γ_1	$\pi\pi$	(34.9 ± 2.3) %	1.2
Γ_2	$\pi^+\pi^-$	seen	
Γ_3	$2\pi^0$	seen	
Γ_4	4π	(49.5 ± 3.3) %	1.2
Γ_5	$4\pi^0$	seen	
Γ_6	$2\pi^+2\pi^-$	seen	
Γ_7	$2(\pi\pi)_{S\text{-wave}}$	seen	
Γ_8	$\rho\rho$	seen	
Γ_9	$\pi(1300)\pi$	seen	
Γ_{10}	$a_1(1260)\pi$	seen	
Γ_{11}	$\eta\eta$	$(\ 5.1\pm0.9)$ %	1.4
Γ_{12}	$\eta\eta'(958)$	$(\ 1.9\pm0.8)$ %	1.7
Γ_{13}	$K\overline{K}$	$(\ 8.6\pm1.0)$ %	1.1
Γ_{14}	$\gamma\gamma$	not seen	

CONSTRAINED FIT INFORMATION

An overall fit to 6 branching ratios uses 10 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 =$ 11.4 for 6 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i\cdot\delta x_j)$, 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_4	−83			
x_{11}	11	−52		
x_{12}	−5	−31	29	
x_{13}	39	−67	33	6
	x_1	x_4	x_{11}	x_{12}

$f_0(1500)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_1\Gamma_{14}/\Gamma$

VALUE (eV)	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$33^{+12}_{-\ 6}{}^{+1809}_{-\ \ 21}$		[34] UEHARA	08A	BELL	10.6 $e^+e^- \rightarrow e^+e^-\pi^0\pi^0$
not seen		ACCIARRI	01H	L3	$\gamma\gamma \rightarrow K^0_S K^0_S$, E^{ee}_{cm}= 91, 183–209 GeV
<460	95	BARATE	00E	ALEP	$\gamma\gamma \rightarrow \pi^+\pi^-$

[34] May also be the $f_0(1370)$. Multiplied by us by 3 to obtain the $\pi\pi$ value.

$f_0(1500)$ BRANCHING RATIOS

$\Gamma(\pi\pi)/\Gamma_{total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.454±0.104	BUGG	96	RVUE

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ — Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
seen	BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
possibly seen	FRABETTI	97D	E687	$D_s^\pm \rightarrow \pi^\mp\pi^\pm\pi^\pm$

$\Gamma(4\pi)/\Gamma(\pi\pi)$ — Γ_4/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
1.42±0.18 OUR FIT Error includes scale factor of 1.2.				
1.42±0.18 OUR AVERAGE Error includes scale factor of 1.2.				
1.37±0.16	BARBERIS	00D		450 $pp \rightarrow p_f 4\pi p_s$
2.1 ±0.6	[35] AMSLER	98	RVUE	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.1 ±0.2	[36] ANISOVICH	02D	SPEC	Combined fit
3.4 ±0.8	[35] ABELE	96	CBAR	0.0 $\overline{p}p \rightarrow 5\pi^0$

$\Gamma(2(\pi\pi)_{S\text{-wave}})/\Gamma(\pi\pi)$ — Γ_7/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.42±0.26	[37] ABELE	01	CBAR	0.0 $\overline{p}d \rightarrow \pi^- 4\pi^0 p$

$\Gamma(2(\pi\pi)_{S\text{-wave}})/\Gamma(4\pi)$ — Γ_7/Γ_4

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.26±0.07	ABELE	01B	CBAR	0.0 $\overline{p}d \rightarrow 5\pi p$

$\Gamma(\rho\rho)/\Gamma(4\pi)$ — Γ_8/Γ_4

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.13±0.08	ABELE	01B	CBAR	0.0 $\overline{p}d \rightarrow 5\pi p$

$\Gamma(\rho\rho)/\Gamma(2(\pi\pi)_{S\text{-wave}})$ — Γ_8/Γ_7

VALUE	DOCUMENT ID		COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
3.3±0.5	BARBERIS	00C	450 $pp \rightarrow p_f \pi^+\pi^- 2\pi^0 p_s$
2.6±0.4	BARBERIS	00C	450 $pp \rightarrow p_f 2(\pi^+\pi^-) p_s$

$\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$ — Γ_9/Γ_4

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.50±0.25	ABELE	01B	CBAR	0.0 $\overline{p}d \rightarrow 5\pi p$

$\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$ — Γ_{10}/Γ_4

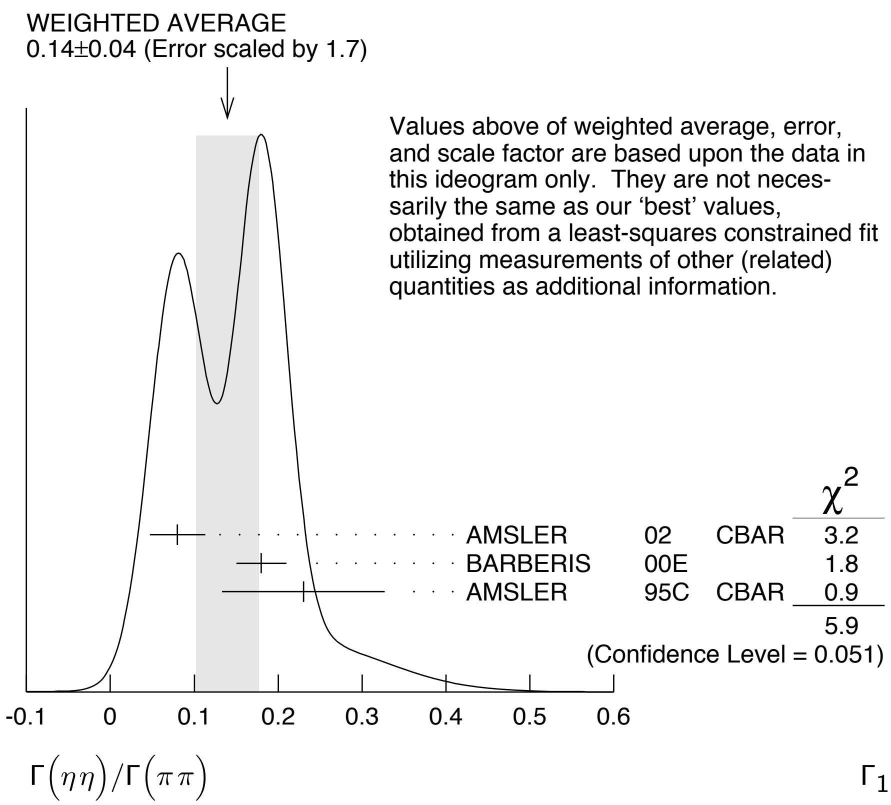
VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.12±0.05	ABELE	01B	CBAR	0.0 $\overline{p}d \rightarrow 5\pi p$

$\Gamma(\eta\eta)/\Gamma_{total}$ — Γ_{11}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
large	ALDE	88	GAM4	300 $\pi^- N \rightarrow \eta\eta\pi^- N$
large	BINON	83	GAM2	38 $\pi^- p \rightarrow 2\eta n$

$\Gamma(\eta\eta)/\Gamma(\pi\pi)$ — Γ_{11}/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.145±0.027 OUR FIT Error includes scale factor of 1.5.				
0.14 ±0.04 OUR AVERAGE Error includes scale factor of 1.7. See the ideogram below.				
0.080±0.033	AMSLER	02	CBAR	0.9 $\overline{p}p \rightarrow \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$
0.18 ±0.03	BARBERIS	00E		450 $pp \rightarrow p_f\eta\eta p_s$
0.230±0.097	[38] AMSLER	95C	CBAR	0.0 $\overline{p}p \rightarrow \eta\eta\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.11 ±0.03	[36] ANISOVICH	02D	SPEC	Combined fit
0.078±0.013	[39] ABELE	96C	RVUE	Compilation
0.157±0.060	[40] AMSLER	95D	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$



$\Gamma(4\pi^0)/\Gamma(\eta\eta)$ — Γ_5/Γ_{11}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.8±0.3	ALDE	87	GAM4	100 $\pi^- p \to 4\pi^0 n$

$\Gamma(\eta\eta'(958))/\Gamma(\pi\pi)$ — Γ_{12}/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.055±0.024 OUR FIT Error includes scale factor of 1.8.				
0.095±0.026	BARBERIS	00A		450 $pp \to p_f \eta\eta p_s$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.005±0.003	[36] ANISOVICH	02D	SPEC	Combined fit

$\Gamma(\eta\eta'(958))/\Gamma(\eta\eta)$ — Γ_{12}/Γ_{11}

VALUE	DOCUMENT ID		TECN	COMMENT
0.38±0.16 OUR FIT Error includes scale factor of 1.9.				
0.29±0.10	[41] AMSLER	95C	CBAR	0.0 $\overline{p}p \to \eta\eta\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.05±0.03	[36] ANISOVICH	02D	SPEC	Combined fit
0.84±0.23	ABELE	96C	RVUE	Compilation
2.7 ±0.8	BINON	84C	GAM2	38 $\pi^- p \to \eta\eta' n$

$\Gamma(K\overline{K})/\Gamma_{\text{total}}$ — Γ_{13}/Γ

VALUE	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.044±0.021	BUGG	96	RVUE

$\Gamma(K\overline{K})/\Gamma(\pi\pi)$ — Γ_{13}/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.246±0.026 OUR FIT				
0.241±0.028 OUR AVERAGE				
0.25 ±0.03	[42] BARGIOTTI	03	OBLX	$\overline{p}p$
0.19 ±0.07	[43] ABELE	98	CBAR	0.0 $\overline{p}p \to K^0_L K^\pm \pi^\mp$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.16 ±0.05	[36] ANISOVICH	02D	SPEC	Combined fit
0.33 ±0.03 ±0.07	BARBERIS	99D	OMEG	450 $pp \to K^+K^-, \pi^+\pi^-$
0.20 ±0.08	[44] ABELE	96B	CBAR	0.0 $\overline{p}p \to \pi^0 K^0_L K^0_L$

$\Gamma(K\overline{K})/\Gamma(\eta\eta)$ — Γ_{13}/Γ_{11}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
1.69±0.33 OUR FIT Error includes scale factor of 1.4.					
1.85±0.41		BARBERIS	00E		450 $pp \to p_f \eta\eta p_s$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.5 ±0.6		[36] ANISOVICH	02D	SPEC	Combined fit
<0.4	90	[45] PROKOSHKIN	91	GAM4	300 $\pi^- p \to \pi^- p\eta\eta$
<0.6		[46] BINON	83	GAM2	38 $\pi^- p \to 2\eta n$

[35] Excluding $\rho\rho$ contribution to 4π.
[36] From a combined K-matrix analysis of Crystal Barrel (0. $p\overline{p} \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$), GAMS ($\pi p \rightarrow \pi^0\pi^0 n$, $\eta\eta n$, $\eta\eta' n$), and BNL ($\pi p \rightarrow K\overline{K} n$) data.
[37] From the combined data of ABELE 96 and ABELE 96C.
[38] Using AMSLER 95B ($3\pi^0$).
[39] 2π width determined to be 60 $\pm$ 12 MeV.
[40] Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[41] Using AMSLER 94E ($\eta\eta'\pi^0$).
[42] Coupled channel analysis of $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, and $K^\pm K^0_S\pi^\mp$.
[43] Using $\pi^0\pi^0$ from AMSLER 95B.
[44] Using AMSLER 95B ($3\pi^0$), AMSLER 94C ($2\pi^0\eta$) and SU(3).
[45] Combining results of GAM4 with those of WA76 on $K\overline{K}$ central production.
[46] Using ETKIN 82B and COHEN 80.

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ASTON	88D	NP B301 525	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)
ALDE	87	PL B198 286	D.M. Alde *et al.*	(LANL, BRUX, SERP, LAPP)
ALDE	86D	NP B269 485	D.M. Alde *et al.*	(BELG, LAPP, SERP, CERN+)
BINON	84C	NC 80A 363	F.G. Binon *et al.*	(BELG, LAPP, SERP+)
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