$f_0(1370)$

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

See also the mini-reviews on scalar mesons under $f_0(500)$ (see the index for the page number) and on non-$q\overline{q}$ candidates in PDG 06, Journal of Physics **G33** 1 (2006).

$f_0(1370)$ T-MATRIX POLE POSITION

Note that $\Gamma \approx 2\ \mathrm{Im}(\sqrt{s_{\mathrm{pole}}})$.

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
(1200–1500)−i(150–250) OUR ESTIMATE				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$(1290 \pm 50) - i(170^{+20}_{-40})$	[1] ANISOVICH	09	RVUE	0.0 $\overline{p}p$, πN
$(1373 \pm 15) - i(137 \pm 10)$	[2] BARGIOTTI	03	OBLX	$\overline{p}p$
$(1302 \pm 17) - i(166 \pm 18)$	[3] BARBERIS	00C		450 $pp \rightarrow p_f 4\pi p_s$
$(1312 \pm 25 \pm 10) - i(109 \pm 22 \pm 15)$	BARBERIS	99D	OMEG	450 $pp \rightarrow K^+ K^-$, $\pi^+\pi^-$
$(1406 \pm 19) - i(80 \pm 6)$	[4] KAMINSKI	99	RVUE	$\pi\pi \rightarrow \pi\pi$, $K\overline{K}$, $\sigma\sigma$
$(1300 \pm 20) - i(120 \pm 20)$	ANISOVICH	98B	RVUE	Compilation
$(1290 \pm 15) - i(145 \pm 15)$	BARBERIS	97B	OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$
$(1548 \pm 40) - i(560 \pm 40)$	BERTIN	97C	OBLX	0.0 $\overline{p}p \rightarrow \pi^+\pi^-\pi^0$
$(1380 \pm 40) - i(180 \pm 25)$	ABELE	96B	CBAR	0.0 $\overline{p}p \rightarrow \pi^0 K^0_L K^0_L$
$(1300 \pm 15) - i(115 \pm 8)$	BUGG	96	RVUE	
$(1330 \pm 50) - i(150 \pm 40)$	[5] AMSLER	95B	CBAR	$\overline{p}p \rightarrow 3\pi^0$
$(1360 \pm 35) - i(150–300)$	[5] AMSLER	95C	CBAR	$\overline{p}p \rightarrow \pi^0\eta\eta$
$(1390 \pm 30) - i(190 \pm 40)$	[6] AMSLER	95D	CBAR	$\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
$1346 - i249$	[7,8] JANSSEN	95	RVUE	$\pi\pi \rightarrow \pi\pi$, $K\overline{K}$
$1214 - i168$	[8,9] TORNQVIST	95	RVUE	$\pi\pi \rightarrow \pi\pi$, $K\overline{K}$, $K\pi$, $\eta\pi$
$1364 - i139$	AMSLER	94D	CBAR	$\overline{p}p \rightarrow \pi^0\pi^0\eta$
$(1365^{+20}_{-55}) - i(134 \pm 35)$	ANISOVICH	94	CBAR	$\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta\eta$
$(1340 \pm 40) - i(127^{+30}_{-20})$	[10] BUGG	94	RVUE	$\overline{p}p \rightarrow 3\pi^0$, $\eta\eta\pi^0$, $\eta\pi^0\pi^0$
$(1430 \pm 5) - i(73 \pm 13)$	[11] KAMINSKI	94	RVUE	$\pi\pi \rightarrow \pi\pi$, $K\overline{K}$
$1420 - i220$	[12] AU	87	RVUE	$\pi\pi \rightarrow \pi\pi$, $K\overline{K}$

[1] Another pole is found at $(1510 \pm 130) - i\,(800^{+100}_{-150})$ MeV.

[2] Coupled channel analysis of $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, and $K^\pm K^0_S \pi^\mp$.

[3] Average between $\pi^+\pi^- 2\pi^0$ and $2(\pi^+\pi^-)$.

[4] T-matrix pole on sheet $---$.

[5] Supersedes ANISOVICH 94.

[6] Coupled-channel analysis of $\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta\eta$, and $\pi^0\pi^0\eta$ on sheet IV. Demonstrates explicitly that $f_0(500)$ and $f_0(1370)$ are two different poles.

[7] Analysis of data from FALVARD 88.

[8] The pole is on Sheet III. Demonstrates explicitly that $f_0(500)$ and $f_0(1370)$ are two different poles.

[9] Uses data from BEIER 72B, OCHS 73, HYAMS 73, GRAYER 74, ROSSELET 77, CASON 83, ASTON 88, and ARMSTRONG 91B. Coupled channel analysis with flavor symmetry and all light two-pseudoscalars systems.
[10] Reanalysis of ANISOVICH 94 data.
[11] T-matrix pole on sheet III.
[12] Analysis of data from OCHS 73,GRAYER 74, BECKER 79, and CASON 83.

$f_0(1370)$ BREIT-WIGNER MASS OR K-MATRIX POLE PARAMETER

VALUE (MeV)	DOCUMENT ID
1200 to 1500 OUR ESTIMATE	

$\pi\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1400 ± 40		[1] AUBERT 09L	BABR	$B^{\pm} \to \pi^{\pm}\pi^{\pm}\pi^{\mp}$
$1470^{+6}_{-7}{}^{+72}_{-255}$		[2] UEHARA 08A	BELL	10.6 $e^+e^- \to e^+e^-\pi^0\pi^0$
1259 ± 55	2.6k	BONVICINI 07	CLEO	$D^+ \to \pi^-\pi^+\pi^+$
$1309\pm1\pm15$		[3] BUGG 07A	RVUE	0.0 $p\overline{p} \to 3\pi^0$
1449 ± 13	4.3k	[4] GARMASH 06	BELL	$B^+ \to K^+\pi^+\pi^-$
1350 ± 50		ABLIKIM 05	BES2	$J/\psi \to \phi\pi^+\pi^-$
$1265\pm30^{+20}_{-35}$		ABLIKIM 05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^-K^+K^-$
$1434\pm18\pm9$	848	AITALA 01A	E791	$D_s^+ \to \pi^-\pi^+\pi^+$
1308 ± 10		BARBERIS 99B	OMEG	450 $pp \to p_s p_f \pi^+\pi^-$
1315 ± 50		BELLAZZINI 99	GAM4	450 $pp \to pp\pi^0\pi^0$
1315 ± 30		ALDE 98	GAM4	100 $\pi^-p \to \pi^0\pi^0 n$
1280 ± 55		BERTIN 98	OBLX	0.05–0.405 $\overline{n}p \to \pi^+\pi^+\pi^-$
1186		[5,6] TORNQVIST 95	RVUE	$\pi\pi \to \pi\pi$, $K\overline{K}$, $K\pi$, $\eta\pi$
1472 ± 12		ARMSTRONG 91	OMEG	300 $pp \to pp\pi\pi$, $ppK\overline{K}$
1275 ± 20		BREAKSTONE 90	SFM	62 $pp \to pp\pi^+\pi^-$
1420 ± 20		AKESSON 86	SPEC	63 $pp \to pp\pi^+\pi^-$
1256		FROGGATT 77	RVUE	$\pi^+\pi^-$ channel

[1] Breit-Wigner mass.
[2] Breit-Wigner mass. May also be the $f_0(1500)$.
[3] Reanalysis of ABELE 96C data.
[4] Also observed by GARMASH 07 in $B^0 \to K_S^0\pi^+\pi^-$ decays. Supersedes GARMASH 05.
[5] Uses data from BEIER 72B, OCHS 73, HYAMS 73, GRAYER 74, ROSSELET 77, CASON 83, ASTON 88, and ARMSTRONG 91B. Coupled channel analysis with flavor symmetry and all light two-pseudoscalars systems.
[6] Also observed by ASNER 00 in $\tau^- \to \pi^-\pi^0\pi^0\nu_\tau$ decays

$K\overline{K}$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1360\pm31\pm28$	430	[1,2] DOBBS	15		$J/\psi \to \gamma K^+ K^-$
$1350\pm48\pm15$	168	[1,2] DOBBS	15		$\psi(2S) \to \gamma K^+ K^-$
$1440\pm\ 6$		VLADIMIRSK...	06	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
1391 ± 10		TIKHOMIROV	03	SPEC	$40.0\ \pi^- C \to K^0_S K^0_S K^0_L X$
1440 ± 50		BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
$1463\pm\ 9$		ETKIN	82B	MPS	$23\ \pi^- p \to n 2K^0_S$
1425 ± 15		WICKLUND	80	SPEC	$6\ \pi N \to K^+ K^- N$
~ 1300		POLYCHRO...	79	STRC	$7\ \pi^- p \to n 2K^0_S$

[1] Using CLEO-c data but not authored by the CLEO Collaboration.
[2] From a fit to a Breit-Wigner line shape with fixed $\Gamma = 346$ MeV.

4π MODE $2(\pi\pi)_S+\rho\rho$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1395 ± 40		ABELE	01	CBAR	$0.0\ \overline{p} d \to \pi^- 4\pi^0 p$
1374 ± 38		AMSLER	94	CBAR	$0.0\ \overline{p} p \to \pi^+\pi^- 3\pi^0$
1345 ± 12		ADAMO	93	OBLX	$\overline{n} p \to 3\pi^+ 2\pi^-$
1386 ± 30		GASPERO	93	DBC	$0.0\ \overline{p} n \to 2\pi^+ 3\pi^-$
~ 1410	5751	[1] BETTINI	66	DBC	$0.0\ \overline{p} n \to 2\pi^+ 3\pi^-$

[1] $\rho\rho$ dominant.

$\eta\eta$ MODE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1262^{+51}_{-78}{}^{+\ 82}_{-103}$	[1] UEHARA	10A	BELL	$10.6\ e^+e^- \to e^+e^-\eta\eta$
1430	AMSLER	92	CBAR	$0.0\ \overline{p} p \to \pi^0\eta\eta$
1220 ± 40	ALDE	86D	GAM4	$100\ \pi^- p \to n 2\eta$

[1] Breit-Wigner mass. May also be the $f_0(1500)$.

COUPLED CHANNEL MODE

VALUE (MeV)	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1306 ± 20	[1] ANISOVICH	03	RVUE

[1] 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.

$f_0(1370)$ BREIT-WIGNER WIDTH

VALUE (MeV)	DOCUMENT ID
200 to 500 OUR ESTIMATE	

$\pi\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
300 ± 80		[1] AUBERT	09L	BABR	$B^{\pm} \to \pi^{\pm}\pi^{\pm}\pi^{\mp}$
$90^{+}_{-}{}^{2}_{1}{}^{+}_{-}{}^{50}_{22}$		[2] UEHARA	08A	BELL	$10.6\ e^{+}e^{-} \to e^{+}e^{-}\pi^{0}\pi^{0}$
298 ± 21	2.6k	BONVICINI	07	CLEO	$D^{+} \to \pi^{-}\pi^{+}\pi^{+}$
126 ± 25	4286	[3] GARMASH	06	BELL	$B^{+} \to K^{+}\pi^{+}\pi^{-}$
265 ± 40		ABLIKIM	05	BES2	$J/\psi \to \phi\pi^{+}\pi^{-}$
$350 \pm 100 {}^{+105}_{-60}$		ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^{+}\pi^{-}K^{+}K^{-}$
$173 \pm 32 \pm 6$	848	AITALA	01A	E791	$D_s^{+} \to \pi^{-}\pi^{+}\pi^{+}$
222 ± 20		BARBERIS	99B	OMEG	$450\ pp \to p_s p_f \pi^{+}\pi^{-}$
255 ± 60		BELLAZZINI	99	GAM4	$450\ pp \to pp\pi^{0}\pi^{0}$
190 ± 50		ALDE	98	GAM4	$100\ \pi^{-}p \to \pi^{0}\pi^{0}n$
323 ± 13		BERTIN	98	OBLX	0.05–$0.405\ \overline{n}p \to \pi^{+}\pi^{+}\pi^{-}$
350		[4,5] TORNQVIST	95	RVUE	$\pi\pi \to \pi\pi, K\overline{K}, K\pi, \eta\pi$
195 ± 33		ARMSTRONG	91	OMEG	$300\ pp \to pp\pi\pi,\ ppK\overline{K}$
285 ± 60		BREAKSTONE	90	SFM	$62\ pp \to pp\pi^{+}\pi^{-}$
460 ± 50		AKESSON	86	SPEC	$63\ pp \to pp\pi^{+}\pi^{-}$
~ 400		[6] FROGGATT	77	RVUE	$\pi^{+}\pi^{-}$ channel

[1] The systematic errors are not reported.
[2] Breit-Wigner width. May also be the $f_0(1500)$.
[3] Also observed by GARMASH 07 in $B^0 \to K^0_S\pi^+\pi^-$ decays. Supersedes GARMASH 05.
[4] Uses data from BEIER 72B, OCHS 73, HYAMS 73, GRAYER 74, ROSSELET 77, CASON 83, ASTON 88, and ARMSTRONG 91B. Coupled channel analysis with flavor symmetry and all light two-pseudoscalars systems.
[5] Also observed by ASNER 00 in $\tau^- \to \pi^-\pi^0\pi^0\nu_\tau$ decays
[6] Width defined as distance between 45 and 135° phase shift.

$K\overline{K}$ MODE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
121 ± 15	VLADIMIRSK...	06	SPEC	$40\ \pi^{-}p \to K^0_S K^0_S n$
55 ± 26	TIKHOMIROV	03	SPEC	$40.0\ \pi^{-}\mathrm{C} \to K^0_S K^0_S K^0_L X$
250 ± 80	BOLONKIN	88	SPEC	$40\ \pi^{-}p \to K^0_S K^0_S n$
118^{+138}_{-16}	ETKIN	82B	MPS	$23\ \pi^{-}p \to n2K^0_S$
160 ± 30	WICKLUND	80	SPEC	$6\ \pi N \to K^{+}K^{-}N$
~ 150	POLYCHRO...	79	STRC	$7\ \pi^{-}p \to n2K^0_S$

4π MODE $2(\pi\pi)_S+\rho\rho$

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
275 ± 55		ABELE	01	CBAR	$0.0\ \overline{p}d \to \pi^{-}4\pi^{0}p$
375 ± 61		AMSLER	94	CBAR	$0.0\ \overline{p}p \to \pi^{+}\pi^{-}3\pi^{0}$
398 ± 26		ADAMO	93	OBLX	$\overline{n}p \to 3\pi^{+}2\pi^{-}$
310 ± 50		GASPERO	93	DBC	$0.0\ \overline{p}n \to 2\pi^{+}3\pi^{-}$
~ 90	5751	[1] BETTINI	66	DBC	$0.0\ \overline{p}n \to 2\pi^{+}3\pi^{-}$

[1] $\rho\rho$ dominant.

$\eta\eta$ MODE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$484^{+246}_{-170}{}^{+246}_{-263}$	[1] UEHARA	10A	BELL	10.6 $e^+e^- \to e^+e^-\eta\eta$
250	AMSLER	92	CBAR	0.0 $\overline{p}p \to \pi^0\eta\eta$
320 ± 40	ALDE	86D	GAM4	100 $\pi^- p \to n2\eta$

[1] Breit-Wigner width. May also be the $f_0(1500)$.

COUPLED CHANNEL MODE

VALUE (MeV)	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
147^{+30}_{-50}	[1] ANISOVICH	03	RVUE

[1] 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.

$f_0(1370)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\pi\pi$	seen
Γ_2	4π	seen
Γ_3	$4\pi^0$	seen
Γ_4	$2\pi^+2\pi^-$	seen
Γ_5	$\pi^+\pi^-2\pi^0$	seen
Γ_6	$\rho\rho$	seen
Γ_7	$2(\pi\pi)_{S\text{-wave}}$	seen
Γ_8	$\pi(1300)\pi$	seen
Γ_9	$a_1(1260)\pi$	seen
Γ_{10}	$\eta\eta$	seen
Γ_{11}	$K\overline{K}$	seen
Γ_{12}	$K\overline{K}n\pi$	not seen
Γ_{13}	6π	not seen
Γ_{14}	$\omega\omega$	not seen
Γ_{15}	$\gamma\gamma$	seen
Γ_{16}	e^+e^-	not seen

$f_0(1370)$ PARTIAL WIDTHS

$\Gamma(\gamma\gamma)$ Γ_{15}

See $\gamma\gamma$ widths under $f_0(500)$ and MORGAN 90.

$\Gamma(e^+e^-)$ Γ_{16}

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
<20	90	VOROBYEV	88	ND	$e^+e^- \to \pi^0\pi^0$

$f_0(1370)$ Γ(i)Γ(γγ)/Γ(total)

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{10}\Gamma_{15}/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$121^{+133}_{-53}{}^{+169}_{-106}$	[1] UEHARA	10A	BELL	10.6 $e^+e^- \to e^+e^-\eta\eta$

[1] Including interference with the $f'_2(1525)$ (parameters fixed to the values from the 2008 edition of this review, PDG 08) and $f_2(1270)$. May also be the $f_0(1500)$.

$f_0(1370)$ BRANCHING RATIOS

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.10	95	OCHS	13	RVUE	
0.26±0.09		BUGG	96	RVUE	
<0.15		[1] AMSLER	94	CBAR	$\overline{p}p \to \pi^+\pi^-3\pi^0$
<0.06		GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

[1] Using AMSLER 95B ($3\pi^0$).

$\Gamma(4\pi)/\Gamma_{total}$ — $\Gamma_2/\Gamma = (\Gamma_3+\Gamma_4+\Gamma_5)/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
>0.72	GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

$\Gamma(4\pi^0)/\Gamma(4\pi)$ — Γ_3/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
seen	ABELE	96	CBAR	0.0 $\overline{p}p \to 5\pi^0$
0.068±0.005	[1] GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

[1] Model-dependent evaluation.

$\Gamma(2\pi^+2\pi^-)/\Gamma(4\pi)$ — $\Gamma_4/\Gamma_2 = \Gamma_4/(\Gamma_3+\Gamma_4+\Gamma_5)$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.420±0.014	[1] GASPERO	93	DBC	0.0 $\overline{p}n \to 2\pi^+3\pi^-$

[1] Model-dependent evaluation.

$\Gamma(\pi^+\pi^-2\pi^0)/\Gamma(4\pi)$ — $\Gamma_5/\Gamma_2 = \Gamma_5/(\Gamma_3+\Gamma_4+\Gamma_5)$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.512±0.019	[1] GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

[1] Model-dependent evaluation.

$\Gamma(\rho\rho)/\Gamma(4\pi)$ — Γ_6/Γ_2

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

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

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5.6 ± 2.6	[1] ABELE	01	CBAR	$0.0\ \overline{p}d \to \pi^- 4\pi^0 p$

[1] From the combined data of ABELE 96 and ABELE 96C.

$\Gamma(2(\pi\pi)_{S\text{-wave}})/\Gamma(4\pi)$ — Γ_7/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.51 ± 0.09	ABELE	01B	CBAR	$0.0\ \overline{p}d \to 5\pi p$

$\Gamma(\rho\rho)/\Gamma(2(\pi\pi)_{S\text{-wave}})$ — Γ_6/Γ_7

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
large	BARBERIS	00C		$450\ pp \to p_f 4\pi p_s$
1.6 ± 0.2	AMSLER	94	CBAR	$\overline{p}p \to \pi^+\pi^- 3\pi^0$
~ 0.65	GASPERO	93	DBC	$0.0\ \overline{p}n \to$ hadrons

$\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$ — Γ_8/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.17 ± 0.06	ABELE	01B	CBAR	$0.0\ \overline{p}d \to 5\pi p$

$\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$ — Γ_9/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.06 ± 0.02	ABELE	01B	CBAR	$0.0\ \overline{p}d \to 5\pi p$

$\Gamma(\eta\eta)/\Gamma(4\pi)$ — $\Gamma_{10}/\Gamma_2 = \Gamma_{10}/(\Gamma_3+\Gamma_4+\Gamma_5)$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$(28 \pm 11) \times 10^{-3}$	[1] ANISOVICH	02D	SPEC	Combined fit
$(4.7 \pm 2.0) \times 10^{-3}$	BARBERIS	00E		$450\ pp \to p_f \eta\eta p_s$

[1] From a combined K-matrix analysis of Crystal Barrel ($0.\ p\overline{p} \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$), GAMS ($\pi p \to \pi^0\pi^0 n$, $\eta\eta n$, $\eta\eta' n$), and BNL ($\pi p \to K\overline{K} n$) data.

$\Gamma(K\overline{K})/\Gamma_{\text{total}}$ — Γ_{11}/Γ

VALUE	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.35 ± 0.13	BUGG	96	RVUE

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

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.08 ± 0.08	ABLIKIM	05	BES2	$J/\psi \to \phi\pi^+\pi^-$, ϕK^+K^-
0.91 ± 0.20	[1] BARGIOTTI	03	OBLX	$\overline{p}p$
0.12 ± 0.06	[2] ANISOVICH	02D	SPEC	Combined fit
$0.46\pm0.15\pm0.11$	BARBERIS	99D	OMEG	450 $pp \to K^+K^-$, $\pi^+\pi^-$

[1] Coupled channel analysis of $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, and $K^\pm K^0_S\pi^\mp$.

[2] From a combined K-matrix analysis of Crystal Barrel (0. $p\overline{p} \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$), GAMS ($\pi p \to \pi^0\pi^0 n$, $\eta\eta n$, $\eta\eta' n$), and BNL ($\pi p \to K\overline{K} n$) data.

$\Gamma(K\overline{K}n\pi)/\Gamma_{total}$ — Γ_{12}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.03	GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

$\Gamma(6\pi)/\Gamma_{total}$ — Γ_{13}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.22	GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

$\Gamma(\omega\omega)/\Gamma_{total}$ — Γ_{14}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.13	GASPERO	93	DBC	0.0 $\overline{p}n \to$ hadrons

$f_0(1370)$ REFERENCES

DOBBS	15	PR D91 052006	S. Dobbs *et al.*	(NWES)
OCHS	13	JP G40 043001	W. Ochs	
UEHARA	10A	PR D82 114031	S. Uehara *et al.*	(BELLE Collab.)
ANISOVICH	09	IJMP A24 2481	V.V. Anisovich, A.V. Sarantsev	
AUBERT	09L	PR D79 072006	B. Aubert *et al.*	(BABAR Collab.)
PDG	08	PL B667 1	C. Amsler *et al.*	(PDG Collab.)
UEHARA	08A	PR D78 052004	S. Uehara *et al.*	(BELLE Collab.)
BONVICINI	07	PR D76 012001	G. Bonvicini *et al.*	(CLEO Collab.)
BUGG	07A	JP G34 151	D.V. Bugg *et al.*	
GARMASH	07	PR D75 012006	A. Garmash *et al.*	(BELLE Collab.)
GARMASH	06	PRL 96 251803	A. Garmash *et al.*	(BELLE Collab.)
PDG	06	JP G33 1	W.-M. Yao *et al.*	(PDG Collab.)
VLADIMIRSK...	06	PAN 69 493 Translated from YAF 69 515.	V.V. Vladimirsky *et al.*	(ITEP, Moscow)
ABLIKIM	05	PL B607 243	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05Q	PR D72 092002	M. Ablikim *et al.*	(BES Collab.)
GARMASH	05	PR D71 092003	A. Garmash *et al.*	(BELLE Collab.)
ANISOVICH	03	EPJ A16 229	V.V. Anisovich *et al.*	
BARGIOTTI	03	EPJ C26 371	M. Bargiotti *et al.*	(OBELIX Collab.)
TIKHOMIROV	03	PAN 66 828 Translated from YAF 66 860.	G.D. Tikhomirov *et al.*	
ANISOVICH	02D	PAN 65 1545 Translated from YAF 65 1583.	V.V. Anisovich *et al.*	

ABELE	01	EPJ C19 667	A. Abele *et al.*	(Crystal Barrel Collab.)
ABELE	01B	EPJ C21 261	A. Abele *et al.*	(Crystal Barrel Collab.)
AITALA	01A	PRL 86 765	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ASNER	00	PR D61 012002	D.M. Asner *et al.*	(CLEO Collab.)
BARBERIS	00C	PL B471 440	D. Barberis *et al.*	(WA 102 Collab.)
BARBERIS	00E	PL B479 59	D. Barberis *et al.*	(WA 102 Collab.)
BARBERIS	99B	PL B453 316	D. Barberis *et al.*	(Omega Expt.)
BARBERIS	99D	PL B462 462	D. Barberis *et al.*	(Omega Expt.)
BELLAZZINI	99	PL B467 296	R. Bellazzini *et al.*	
KAMINSKI	99	EPJ C9 141	R. Kaminski, L. Lesniak, B. Loiseau	(CRAC, PARIN)
ALDE	98	EPJ A3 361	D. Alde *et al.*	(GAM4 Collab.)
Also		PAN 62 405	D. Alde *et al.*	(GAMS Collab.)
		Translated from YAF 62 446.		
ANISOVICH	98B	SPU 41 419	V.V. Anisovich *et al.*	
		Translated from UFN 168 481.		
BERTIN	98	PR D57 55	A. Bertin *et al.*	(OBELIX Collab.)
BARBERIS	97B	PL B413 217	D. Barberis *et al.*	(WA 102 Collab.)
BERTIN	97C	PL B408 476	A. Bertin *et al.*	(OBELIX Collab.)
ABELE	96	PL B380 453	A. Abele *et al.*	(Crystal Barrel Collab.)
ABELE	96B	PL B385 425	A. Abele *et al.*	(Crystal Barrel Collab.)
ABELE	96C	NP A609 562	A. Abele *et al.*	(Crystal Barrel Collab.)
BUGG	96	NP B471 59	D.V. Bugg, A.V. Sarantsev, B.S. Zou	(LOQM, PNPI)
AMSLER	95B	PL B342 433	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	95C	PL B353 571	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	95D	PL B355 425	C. Amsler *et al.*	(Crystal Barrel Collab.)
JANSSEN	95	PR D52 2690	G. Janssen *et al.*	(STON, ADLD, JULI)
TORNQVIST	95	ZPHY C68 647	N.A. Tornqvist	(HELS)
AMSLER	94	PL B322 431	C. Amsler *et al.*	(Crystal Barrel Collab.) JPC
AMSLER	94D	PL B333 277	C. Amsler *et al.*	(Crystal Barrel Collab.)
ANISOVICH	94	PL B323 233	V.V. Anisovich *et al.*	(Crystal Barrel Collab.) JPC
BUGG	94	PR D50 4412	D.V. Bugg *et al.*	(LOQM)
KAMINSKI	94	PR D50 3145	R. Kaminski, L. Lesniak, J.P. Maillet	(CRAC+)
ADAMO	93	NP A558 13C	A. Adamo *et al.*	(OBELIX Collab.) JPC
GASPERO	93	NP A562 407	M. Gaspero	(ROMAI) JPC
AMSLER	92	PL B291 347	C. Amsler *et al.*	(Crystal Barrel Collab.)
ARMSTRONG	91	ZPHY C51 351	T.A. Armstrong *et al.*	(ATHU, BARI, BIRM+)
ARMSTRONG	91B	ZPHY C52 389	T.A. Armstrong *et al.*	(ATHU, BARI, BIRM+)
BREAKSTONE	90	ZPHY C48 569	A.M. Breakstone *et al.*	(ISU, BGNA, CERN+)
MORGAN	90	ZPHY C48 623	D. Morgan, M.R. Pennington	(RAL, DURH)
ASTON	88	NP B296 493	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)
BOLONKIN	88	NP B309 426	B.V. Bolonkin *et al.*	(ITEP, SERP)
FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)
VOROBYEV	88	SJNP 48 273	P.V. Vorobiev *et al.*	(NOVO)
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AU	87	PR D35 1633	K.L. Au, D. Morgan, M.R. Pennington	(DURH, RAL)
AKESSON	86	NP B264 154	T. Akesson *et al.*	(Axial Field Spec. Collab.)
ALDE	86D	NP B269 485	D.M. Alde *et al.*	(BELG, LAPP, SERP, CERN+)
CASON	83	PR D28 1586	N.M. Cason *et al.*	(NDAM, ANL)
ETKIN	82B	PR D25 1786	A. Etkin *et al.*	(BNL, CUNY, TUFTS, VAND)
WICKLUND	80	PRL 45 1469	A.B. Wicklund *et al.*	(ANL)
BECKER	79	NP B151 46	H. Becker *et al.*	(MPIM, CERN, ZEEM, CRAC)
POLYCHRO...	79	PR D19 1317	V.A. Polychronakos *et al.*	(NDAM, ANL)
FROGGATT	77	NP B129 89	C.D. Froggatt, J.L. Petersen	(GLAS, NORD)
ROSSELET	77	PR D15 574	L. Rosselet *et al.*	(GEVA, SACL)
GRAYER	74	NP B75 189	G. Grayer *et al.*	(CERN, MPIM)
HYAMS	73	NP B64 134	B.D. Hyams *et al.*	(CERN, MPIM)
OCHS	73	Thesis	W. Ochs	(MPIM, MUNI)
BEIER	72B	PRL 29 511	E.W. Beier *et al.*	(PENN)
BETTINI	66	NC 42A 695	A. Bettini *et al.*	(PADO, PISA)