

$f_0(1370)$

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

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

$f_0(1370)$ T-MATRIX POLE POSITION

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

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 $0.0 \bar{p}p, \pi N$
$(1373 \pm 15) - i(137 \pm 10)$	² BARGIOTTI	03	OBLX $\bar{p}p$
$(1302 \pm 17) - i(166 \pm 18)$	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 $\pi\pi \rightarrow \pi\pi, K\bar{K}, \sigma\sigma$
$(1300 \pm 20) - i(120 \pm 20)$	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 $0.0 \bar{p}p \rightarrow \pi^+ \pi^- \pi^0$
$(1380 \pm 40) - i(180 \pm 25)$	ABELE	96B	CBAR $0.0 \bar{p}p \rightarrow \pi^0 K_L^0 K_L^0$
$(1300 \pm 15) - i(115 \pm 8)$	BUGG	96	RVUE
$(1330 \pm 50) - i(150 \pm 40)$	⁵ AMSLER	95B	CBAR $\bar{p}p \rightarrow 3\pi^0$
$(1360 \pm 35) - i(150-300)$	⁵ AMSLER	95C	CBAR $\bar{p}p \rightarrow \pi^0 \eta\eta$
$(1390 \pm 30) - i(190 \pm 40)$	⁶ AMSLER	95D	CBAR $\bar{p}p \rightarrow 3\pi^0, \pi^0 \eta\eta, \pi^0 \pi^0 \eta$
$1346 - i249$	^{7,8} JANSSEN	95	RVUE $\pi\pi \rightarrow \pi\pi, K\bar{K}$
$1214 - i168$	^{8,9} TORNQVIST	95	RVUE $\pi\pi \rightarrow \pi\pi, K\bar{K}, K\pi, \eta\pi$
$1364 - i139$	AMSLER	94D	CBAR $\bar{p}p \rightarrow \pi^0 \pi^0 \eta$
$(1365^{+20}_{-55}) - i(134 \pm 35)$	ANISOVICH	94	CBAR $\bar{p}p \rightarrow 3\pi^0, \pi^0 \eta\eta$
$(1340 \pm 40) - i(127^{+30}_{-20})$	¹⁰ BUGG	94	RVUE $\bar{p}p \rightarrow 3\pi^0, \eta\eta\pi^0, \eta\pi^0 \pi^0$
$(1430 \pm 5) - i(73 \pm 13)$	¹¹ KAMINSKI	94	RVUE $\pi\pi \rightarrow \pi\pi, K\bar{K}$
$1420 - i220$	¹² AU	87	RVUE $\pi\pi \rightarrow \pi\pi, K\bar{K}$

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 $K^\pm K_S^0 \pi^\mp$.

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 $\bar{p}p \rightarrow 3\pi^0, \pi^0 \eta\eta$, and $\pi^0 \pi^0 \eta$ on sheet IV. Demonstrates explicitly that $f_0(600)$ 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 $f_0(600)$ 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

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1400±40		¹³ AUBERT	09L BABR	$B^\pm \rightarrow \pi^\pm \pi^\pm \pi^\mp$
1470 ⁺⁶ ₋₇ ⁷² ₋₂₅₅		¹⁴ UEHARA	08A BELL	10.6 $e^+e^- \rightarrow e^+e^-\pi^0\pi^0$
1259±55	2.6k	BONVICINI	07 CLEO	$D^+ \rightarrow \pi^-\pi^+\pi^+$
1309±1±15		¹⁵ BUGG	07A RVUE	0.0 $p\bar{p} \rightarrow 3\pi^0$
1449±13	4286	¹⁶ GARMASH	06 BELL	$B^+ \rightarrow K^+\pi^+\pi^-$
1350±50		ABLIKIM	05 BES2	$J/\psi \rightarrow \phi\pi^+\pi^-$
1265±30 ⁺²⁰ ₋₃₅		ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$
1434±18±9	848	AITALA	01A E791	$D_s^+ \rightarrow \pi^-\pi^+\pi^+$
1308±10		BARBERIS	99B OMEG	450 $pp \rightarrow p_s p_f \pi^+\pi^-$
1315±50		BELLAZZINI	99 GAM4	450 $pp \rightarrow pp\pi^0\pi^0$
1315±30		ALDE	98 GAM4	100 $\pi^-p \rightarrow \pi^0\pi^0n$
1280±55		BERTIN	98 OBLX	0.05–0.405 $\bar{n}p \rightarrow \pi^+\pi^+\pi^-$
1186		^{17,18} TORNQVIST	95 RVUE	$\pi\pi \rightarrow \pi\pi, K\bar{K}, K\pi, \eta\pi$
1472±12		ARMSTRONG	91 OMEG	300 $pp \rightarrow pp\pi\pi, ppK\bar{K}$
1275±20		BREAKSTONE	90 SFM	62 $pp \rightarrow pp\pi^+\pi^-$
1420±20		AKESSON	86 SPEC	63 $pp \rightarrow pp\pi^+\pi^-$
1256		FROGGATT	77 RVUE	$\pi^+\pi^-$ channel

¹³ Breit-Wigner mass.

¹⁴ Breit-Wigner mass. May also be the $f_0(1500)$.

¹⁵ Reanalysis of ABELE 96C data.

¹⁶ Also observed by GARMASH 07 in $B^0 \rightarrow K_S^0\pi^+\pi^-$ decays. Supersedes GARMASH 05.

¹⁷ 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.

¹⁸ Also observed by ASNER 00 in $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ decays

$K\bar{K}$ MODE

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1440±6	VLADIMIRSK...06	SPEC	40 $\pi^-p \rightarrow K_S^0 K_S^0 n$
1391±10	TIKHOMIROV 03	SPEC	40.0 $\pi^-C \rightarrow K_S^0 K_S^0 K_L^0 X$
1440±50	BOLONKIN 88	SPEC	40 $\pi^-p \rightarrow K_S^0 K_S^0 n$
1463±9	ETKIN 82B	MPS	23 $\pi^-p \rightarrow n2K_S^0$
1425±15	WICKLUND 80	SPEC	6 $\pi N \rightarrow K^+K^-N$
~1300	POLYCHRO... 79	STRC	7 $\pi^-p \rightarrow n2K_S^0$

4π MODE 2(ππ)_S+ρρ

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 $\bar{p}d \rightarrow \pi^- 4\pi^0 p$
1374 ± 38		AMSLER	94	CBAR 0.0 $\bar{p}p \rightarrow \pi^+ \pi^- 3\pi^0$
1345 ± 12		ADAMO	93	OBLX $\bar{n}p \rightarrow 3\pi^+ 2\pi^-$
1386 ± 30		GASPERO	93	DBC 0.0 $\bar{p}n \rightarrow 2\pi^+ 3\pi^-$
~ 1410	5751	¹⁹ BETTINI	66	DBC 0.0 $\bar{p}n \rightarrow 2\pi^+ 3\pi^-$
¹⁹ ρρ dominant.				

ηη MODE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1430	AMSLER	92	CBAR 0.0 $\bar{p}p \rightarrow \pi^0 \eta \eta$
1220 ± 40	ALDE	86D	GAM4 100 $\pi^- p \rightarrow n 2\eta$

COUPLED CHANNEL MODE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1306 ± 20	²⁰ ANISOVICH	03	RVUE
²⁰ K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0 \pi^0 n$, $\pi^- p \rightarrow K \bar{K} n$, $\pi^+ \pi^- \rightarrow \pi^+ \pi^-$, $\bar{p}p \rightarrow \pi^0 \pi^0 \pi^0$, $\pi^0 \eta \eta$, $\pi^0 \pi^0 \eta$, $\pi^+ \pi^- \pi^0$, $K^+ K^- \pi^0$, $K_S^0 K_S^0 \pi^0$, $K^+ K_S^0 \pi^-$ at rest, $\bar{p}n \rightarrow \pi^- \pi^- \pi^+$, $K_S^0 K^- \pi^0$, $K_S^0 K_S^0 \pi^-$ at rest.			

f₀(1370) BREIT-WIGNER WIDTH

VALUE (MeV)	DOCUMENT ID
200 to 500 OUR ESTIMATE	

ππ MODE

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
300 ± 80		²¹ AUBERT	09L	BABR $B^\pm \rightarrow \pi^\pm \pi^\pm \pi^\mp$
90 ⁺ ₋ 2 ⁺ ₁₋ 50 ₂₂		²² UEHARA	08A	BELL 10.6 $e^+ e^- \rightarrow e^+ e^- \pi^0 \pi^0$
298 ± 21	2.6k	BONVICINI	07	CLEO $D^+ \rightarrow \pi^- \pi^+ \pi^+$
126 ± 25	4286	²³ GARMASH	06	BELL $B^+ \rightarrow K^+ \pi^+ \pi^-$
265 ± 40		ABLIKIM	05	BES2 $J/\psi \rightarrow \phi \pi^+ \pi^-$
350 ± 100 ⁺ ₋ 105 ₆₀		ABLIKIM	05Q	BES2 $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$
173 ± 32 ± 6	848	AITALA	01A	E791 $D_s^+ \rightarrow \pi^- \pi^+ \pi^+$
222 ± 20		BARBERIS	99B	OMEG 450 $pp \rightarrow p_s p_f \pi^+ \pi^-$
255 ± 60		BELLAZZINI	99	GAM4 450 $pp \rightarrow pp \pi^0 \pi^0$
190 ± 50		ALDE	98	GAM4 100 $\pi^- p \rightarrow \pi^0 \pi^0 n$
323 ± 13		BERTIN	98	OBLX 0.05–0.405 $\bar{n}p \rightarrow \pi^+ \pi^+ \pi^-$
350		^{24,25} TORNQVIST	95	RVUE $\pi\pi \rightarrow \pi\pi, K \bar{K}, K\pi, \eta\pi$
195 ± 33		ARMSTRONG	91	OMEG 300 $pp \rightarrow pp \pi\pi, pp K \bar{K}$
285 ± 60		BREAKSTONE	90	SFM 62 $pp \rightarrow pp \pi^+ \pi^-$
460 ± 50		AKESSON	86	SPEC 63 $pp \rightarrow pp \pi^+ \pi^-$
~ 400		²⁶ FROGGATT	77	RVUE $\pi^+ \pi^-$ channel

- ²¹ The systematic errors are not reported.
²² Breit-Wigner width. May also be the $f_0(1500)$.
²³ Also observed by GARMASH 07 in $B^0 \rightarrow K_S^0 \pi^+ \pi^-$ decays. Supersedes GARMASH 05.
²⁴ 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.
²⁵ Also observed by ASNER 00 in $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$ decays
²⁶ Width defined as distance between 45 and 135° phase shift.

$K\bar{K}$ 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 $\pi^- p \rightarrow K_S^0 K_S^0 n$
55 ± 26	TIKHOMIROV 03	SPEC	40.0 $\pi^- C \rightarrow K_S^0 K_S^0 K_L^0 X$
250 ± 80	BOLONKIN 88	SPEC	40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
118 ⁺¹³⁸ ₋₁₆	ETKIN 82B	MPS	23 $\pi^- p \rightarrow n 2K_S^0$
160 ± 30	WICKLUND 80	SPEC	6 $\pi N \rightarrow K^+ K^- N$
~ 150	POLYCHRO... 79	STRC	7 $\pi^- p \rightarrow n 2K_S^0$

4π MODE 2(ππ)_S+ρρ

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 $\bar{p}d \rightarrow \pi^- 4\pi^0 p$
375 ± 61		AMSLER 94	CBAR	0.0 $\bar{p}p \rightarrow \pi^+ \pi^- 3\pi^0$
398 ± 26		ADAMO 93	OBLX	$\bar{n}p \rightarrow 3\pi^+ 2\pi^-$
310 ± 50		GASPERO 93	DBC	0.0 $\bar{p}n \rightarrow 2\pi^+ 3\pi^-$
~ 90	5751	²⁷ BETTINI 66	DBC	0.0 $\bar{p}n \rightarrow 2\pi^+ 3\pi^-$
²⁷ ρρ dominant.				

ηη MODE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
• • •	We do not use the following data for averages, fits, limits, etc. • • •		
250	AMSLER 92	CBAR	0.0 $\bar{p}p \rightarrow \pi^0 \eta \eta$
320 ± 40	ALDE 86D	GAM4	100 $\pi^- p \rightarrow n 2\eta$

COUPLED CHANNEL MODE

VALUE (MeV)	DOCUMENT ID	TECN
• • •	We do not use the following data for averages, fits, limits, etc. • • •	
147 ⁺³⁰ ₋₅₀	²⁸ ANISOVICH 03	RVUE
²⁸ K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0 \pi^0 n$, $\pi^- p \rightarrow K\bar{K}n$, $\pi^+ \pi^- \rightarrow \pi^+ \pi^-$, $\bar{p}p \rightarrow \pi^0 \pi^0 \pi^0$, $\pi^0 \eta \eta$, $\pi^0 \pi^0 \eta$, $\pi^+ \pi^- \pi^0$, $K^+ K^- \pi^0$, $K_S^0 K_S^0 \pi^0$, $K^+ K_S^0 \pi^-$ at rest, $\bar{p}n \rightarrow \pi^- \pi^- \pi^+$, $K_S^0 K^- \pi^0$, $K_S^0 K_S^0 \pi^-$ 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 $\rho\rho$	dominant
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} $K\bar{K}$	seen
Γ_{12} $K\bar{K}n\pi$	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 $f_0(600)$ and MORGAN 90.

$\Gamma(e^+e^-)$ Γ_{16}

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

$f_0(1370)$ BRANCHING RATIOS

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

VALUE	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
0.26 ± 0.09	BUGG 96	RVUE	
<0.15	²⁹ AMSLER 94	CBAR	$\bar{p}p \rightarrow \pi^+\pi^-3\pi^0$
<0.06	GASPERO 93	DBC	$0.0 \bar{p}n \rightarrow \text{hadrons}$
²⁹ Using AMSLER 95B ($3\pi^0$).			

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

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

$\Gamma(4\pi^0)/\Gamma(4\pi)$

Γ_3/Γ_2

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

seen	ABELE	96	CBAR	0.0 $\bar{p}p \rightarrow 5\pi^0$
0.068 ± 0.005	³⁰ GASPERO	93	DBC	0.0 $\bar{p}n \rightarrow$ hadrons

³⁰ Model-dependent evaluation.

$\Gamma(2\pi^+2\pi^-)/\Gamma(4\pi)$

$\Gamma_4/\Gamma_2 = \Gamma_4/(\Gamma_3+\Gamma_4+\Gamma_5)$

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

0.420 ± 0.014	³¹ GASPERO	93	DBC	0.0 $\bar{p}n \rightarrow 2\pi^+3\pi^-$
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³¹ Model-dependent evaluation.

$\Gamma(\pi^+\pi^-2\pi^0)/\Gamma(4\pi)$

$\Gamma_5/\Gamma_2 = \Gamma_5/(\Gamma_3+\Gamma_4+\Gamma_5)$

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

0.512 ± 0.019	³² GASPERO	93	DBC	0.0 $\bar{p}n \rightarrow$ hadrons
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³² Model-dependent evaluation.

$\Gamma(\rho\rho)/\Gamma(4\pi)$

Γ_6/Γ_2

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

0.26 ± 0.07	ABELE	01B	CBAR	0.0 $\bar{p}d \rightarrow 5\pi p$
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$\Gamma(2(\pi\pi)_{S\text{-wave}})/\Gamma(\pi\pi)$

Γ_7/Γ_1

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

5.6 ± 2.6	³³ ABELE	01	CBAR	0.0 $\bar{p}d \rightarrow \pi^-4\pi^0 p$
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³³ From the combined data of ABELE 96 and ABELE 96C.

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

Γ_7/Γ_2

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

0.51 ± 0.09	ABELE	01B	CBAR	0.0 $\bar{p}d \rightarrow 5\pi p$
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$\Gamma(\rho\rho)/\Gamma(2(\pi\pi)_{S\text{-wave}})$

Γ_6/Γ_7

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

large	BARBERIS	00C		450 $pp \rightarrow p_f 4\pi p_s$
1.6 ± 0.2	AMSLER	94	CBAR	$\bar{p}p \rightarrow \pi^+\pi^-3\pi^0$
~ 0.65	GASPERO	93	DBC	0.0 $\bar{p}n \rightarrow$ hadrons

$\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$

Γ_8/Γ_2

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

0.17 ± 0.06	ABELE	01B	CBAR	0.0 $\bar{p}d \rightarrow 5\pi p$
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$\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$

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 $\bar{p}d \rightarrow 5\pi p$

$\Gamma(\eta\eta)/\Gamma(4\pi)$

$\Gamma_{10}/\Gamma_2 = \Gamma_{10}/(\Gamma_3 + \Gamma_4 + \Gamma_5)$

VALUE DOCUMENT ID TECN COMMENT

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

(28 ± 11) × 10⁻³ ³⁴ ANISOVICH 02D SPEC Combined fit
 (4.7 ± 2.0) × 10⁻³ BARBERIS 00E 450 $p\bar{p} \rightarrow p_f \eta \eta p_s$
³⁴ From a combined K-matrix analysis of Crystal Barrel (0. $p\bar{p} \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta \eta, \pi^0 \pi^0 \eta$), GAMS ($\pi p \rightarrow \pi^0 \pi^0 n, \eta \eta n, \eta \eta' n$), and BNL ($\pi p \rightarrow K \bar{K} n$) data.

$\Gamma(K\bar{K})/\Gamma_{\text{total}}$

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

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

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 $J/\psi \rightarrow \phi \pi^+ \pi^-, \phi K^+ K^-$
 0.91 ± 0.20 ³⁵ BARGIOTTI 03 OBLX $\bar{p}p$
 0.12 ± 0.06 ³⁶ ANISOVICH 02D SPEC Combined fit
 0.46 ± 0.15 ± 0.11 BARBERIS 99D OMEG 450 $p\bar{p} \rightarrow K^+ K^-, \pi^+ \pi^-$
³⁵ Coupled channel analysis of $\pi^+ \pi^- \pi^0, K^+ K^- \pi^0$, and $K^\pm K_S^0 \pi^\mp$.
³⁶ From a combined K-matrix analysis of Crystal Barrel (0. $p\bar{p} \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta \eta, \pi^0 \pi^0 \eta$), GAMS ($\pi p \rightarrow \pi^0 \pi^0 n, \eta \eta n, \eta \eta' n$), and BNL ($\pi p \rightarrow K \bar{K} n$) data.

$\Gamma(K\bar{K}n\pi)/\Gamma_{\text{total}}$

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 $\bar{p}n \rightarrow \text{hadrons}$

$\Gamma(6\pi)/\Gamma_{\text{total}}$

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 $\bar{p}n \rightarrow \text{hadrons}$

$\Gamma(\omega\omega)/\Gamma_{\text{total}}$

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 $\bar{p}n \rightarrow \text{hadrons}$

$f_0(1370)$ REFERENCES

ANISOVICH	09	IJMP A24 2481	V.V. Anisovich, A.V. Sarantsev	
AUBERT	09L	PR D79 072006	B. Aubert <i>et al.</i>	(BABAR Collab.)
UEHARA	08A	PR D78 052004	S. Uehara <i>et al.</i>	(BELLE Collab.)
BONVICINI	07	PR D76 012001	G. Bonvicini <i>et al.</i>	(CLEO Collab.)
BUGG	07A	JPG 34 151	D.V. Bugg <i>et al.</i>	
GARMASH	07	PR D75 012006	A. Garmash <i>et al.</i>	(BELLE Collab.)
GARMASH	06	PRL 96 251803	A. Garmash <i>et al.</i>	(BELLE Collab.)
PDG	06	JPG 33 1	W.-M. Yao <i>et al.</i>	(PDG Collab.)
VLADIMIRSK...	06	PAN 69 493	V.V. Vladimirov <i>et al.</i>	(ITEP, Moscow)
		Translated from YAF 69	515.	
ABLIKIM	05	PL B607 243	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	05Q	PR D72 092002	M. Ablikim <i>et al.</i>	(BES Collab.)
GARMASH	05	PR D71 092003	A. Garmash <i>et al.</i>	(BELLE Collab.)
ANISOVICH	03	EPJ A16 229	V.V. Anisovich <i>et al.</i>	
BARGIOTTI	03	EPJ C26 371	M. Bargiotti <i>et al.</i>	(OBELIX Collab.)
TIKHOMIROV	03	PAN 66 828	G.D. Tikhomirov <i>et al.</i>	
		Translated from YAF 66	860.	
ANISOVICH	02D	PAN 65 1545	V.V. Anisovich <i>et al.</i>	
		Translated from YAF 65	1583.	
ABELE	01	EPJ C19 667	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE	01B	EPJ C21 261	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
AITALA	01A	PRL 86 765	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)
ASNER	00	PR D61 012002	D.M. Asner <i>et al.</i>	(CLEO Collab.)
BARBERIS	00C	PL B471 440	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	00E	PL B479 59	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	99B	PL B453 316	D. Barberis <i>et al.</i>	(Omega Expt.)
BARBERIS	99D	PL B462 462	D. Barberis <i>et al.</i>	(Omega Expt.)
BELLAZZINI	99	PL B467 296	R. Bellazzini <i>et al.</i>	
KAMINSKI	99	EPJ C9 141	R. Kaminski, L. Lesniak, B. Loiseau	(CRAC, PARIN)
ALDE	98	EPJ A3 361	D. Alde <i>et al.</i>	(GAM4 Collab.)
Also		PAN 62 405	D. Alde <i>et al.</i>	(GAMS Collab.)
		Translated from YAF 62	446.	
ANISOVICH	98B	SPU 41 419	V.V. Anisovich <i>et al.</i>	
		Translated from UFN 168	481.	
BERTIN	98	PR D57 55	A. Bertin <i>et al.</i>	(OBELIX Collab.)
BARBERIS	97B	PL B413 217	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BERTIN	97C	PL B408 476	A. Bertin <i>et al.</i>	(OBELIX Collab.)
ABELE	96	PL B380 453	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE	96B	PL B385 425	A. Abele <i>et al.</i>	(Crystal Barrel Collab.)
ABELE	96C	NP A609 562	A. Abele <i>et al.</i>	(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 <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	95C	PL B353 571	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	95D	PL B355 425	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
JANSSSEN	95	PR D52 2690	G. Janssen <i>et al.</i>	(STON, ADLD, JULI)
TORNQVIST	95	ZPHY C68 647	N.A. Tornqvist	(HELS)
AMSLER	94	PL B322 431	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.) JPC
AMSLER	94D	PL B333 277	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
ANISOVICH	94	PL B323 233	V.V. Anisovich <i>et al.</i>	(Crystal Barrel Collab.) JPC
BUGG	94	PR D50 4412	D.V. Bugg <i>et al.</i>	(LOQM)
KAMINSKI	94	PR D50 3145	R. Kaminski, L. Lesniak, J.P. Maillet	(CRAC+)
ADAMO	93	NP A558 13C	A. Adamo <i>et al.</i>	(OBELIX Collab.) JPC
GASPERO	93	NP A562 407	M. Gaspero	(ROMA) JPC
AMSLER	92	PL B291 347	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
ARMSTRONG	91	ZPHY C51 351	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+)
ARMSTRONG	91B	ZPHY C52 389	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+)
BREAKSTONE	90	ZPHY C48 569	A.M. Breakstone <i>et al.</i>	(ISU, BGNA, CERN+)
MORGAN	90	ZPHY C48 623	D. Morgan, M.R. Pennington	(RAL, DURH)
ASTON	88	NP B296 493	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
BOLONKIN	88	NP B309 426	B.V. Bolonkin <i>et al.</i>	(ITEP, SERP)
FALVARD	88	PR D38 2706	A. Falvard <i>et al.</i>	(CLER, FRAS, LALO+)
VOROBYEV	88	SJNP 48 273	P.V. Vorobiev <i>et al.</i>	(NOVO)
		Translated from YAF 48	436.	
AU	87	PR D35 1633	K.L. Au, D. Morgan, M.R. Pennington	(DURH, RAL)
AKESSON	86	NP B264 154	T. Akesson <i>et al.</i>	(Axial Field Spec. Collab.)
ALDE	86D	NP B269 485	D.M. Alde <i>et al.</i>	(BELG, LAPP, SERP, CERN+)
CASON	83	PR D28 1586	N.M. Cason <i>et al.</i>	(NDAM, ANL)
ETKIN	82B	PR D25 1786	A. Etkin <i>et al.</i>	(BNL, CUNY, TUFTS, VAND)
WICKLUND	80	PRL 45 1469	A.B. Wicklund <i>et al.</i>	(ANL)

BECKER	79	NP B151 46	H. Becker <i>et al.</i>	(MPIM, CERN, ZEEM, CRAC)
POLYCHRO...	79	PR D19 1317	V.A. Polychronakos <i>et al.</i>	(NDAM, ANL)
FROGGATT	77	NP B129 89	C.D. Froggatt, J.L. Petersen	(GLAS, NORD)
ROSSELET	77	PR D15 574	L. Rosselet <i>et al.</i>	(GEVA, SACL)
GRAYER	74	NP B75 189	G. Grayer <i>et al.</i>	(CERN, MPIM)
HYAMS	73	NP B64 134	B.D. Hyams <i>et al.</i>	(CERN, MPIM)
OCHS	73	Thesis	W. Ochs	(MPIM, MUNI)
BEIER	72B	PRL 29 511	E.W. Beier <i>et al.</i>	(PENN)
BETTINI	66	NC 42A 695	A. Bettini <i>et al.</i>	(PADO, PISA)
