$f_0(1710)$

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

See the review on "Non-$q\overline{q}$ Mesons."

$f_0(1710)$ MASS

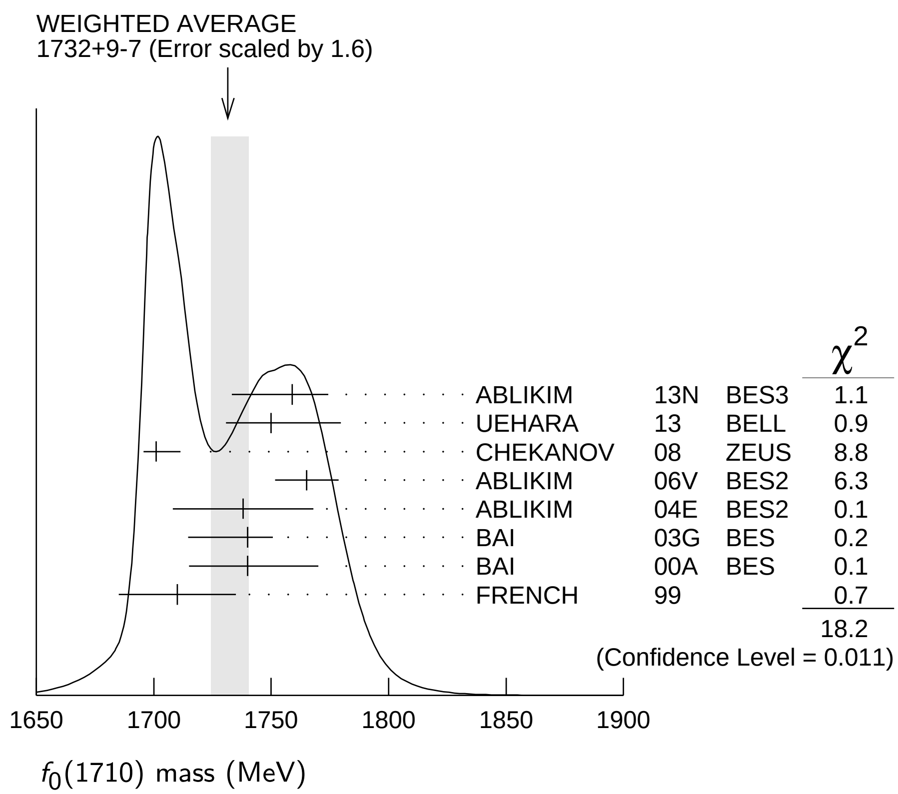
OUR EVALUATION below is based on T-matrix poles from BARBERIS 00E and BARBERIS 99D.

VALUE (MeV)		EVTS	DOCUMENT ID		TECN	COMMENT
1704±12	**OUR EVALUATION**					
1732^{+9}_{-7}	**OUR AVERAGE**	Error includes scale factor of 1.6. See the ideogram below.				
1759± 6	$^{+14}_{-25}$	5.5k	[1] ABLIKIM	13N	BES3	$e^+e^- \to J/\psi \to \gamma\eta\eta$
1750^{+6}_{-7}	$^{+29}_{-18}$		[2] UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$
1701± 5	$^{+9}_{-2}$	4k	[3] CHEKANOV	08	ZEUS	$ep \to K^0_S K^0_S X$
1765^{+4}_{-3}	±13		[4] ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$
1738±30			ABLIKIM	04E	BES2	$J/\psi \to \omega K^+K^-$
1740± 4	$^{+10}_{-25}$		BAI	03G	BES	$J/\psi \to \gamma K\overline{K}$
1740^{+30}_{-25}			BAI	00A	BES	$J/\psi \to \gamma(\pi^+\pi^-\pi^+\pi^-)$
1710±25			[5] FRENCH	99		300 $pp \to p_f(K^+K^-)p_s$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1744± 7	± 5	381	[6,7] DOBBS	15		$J/\psi \to \gamma\pi^+\pi^-$
1705±11	± 5	237	[6,7] DOBBS	15		$\psi(2S) \to \gamma\pi^+\pi^-$
1706± 4	± 5	1.0k	[6,7] DOBBS	15		$J/\psi \to \gamma K^+K^-$
1690± 8	± 3	349	[6,7] DOBBS	15		$\psi(2S) \to \gamma K^+K^-$
1750±13			AMSLER	06	CBAR	1.64 $\overline{p}p \to K^+K^-\pi^0$
1747± 5		80k	[4,8] UMAN	06	E835	5.2 $\overline{p}p \to \eta\eta\pi^0$
1776±15			VLADIMIRSK...	06	SPEC	40 $\pi^-p \to K^0_S K^0_S n$
1790^{+40}_{-30}			[9] ABLIKIM	05	BES2	$J/\psi \to \phi\pi^+\pi^-$
1760±15	$^{+15}_{-10}$		[9] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^-K^+K^-$
1670±20			[4] BINON	05	GAMS	33 $\pi^-p \to \eta\eta n$
1732+15			[10] ANISOVICH	03	RVUE	
1682±16			TIKHOMIROV	03	SPEC	40.0 $\pi^-C \to K^0_S K^0_S K^0_L X$
1670±26		3.6k	[11] NICHITIU	02	OBLX	0 $\bar{p}p \to K^+K^-\pi^+\pi^-\pi^0$
1698±18			[12] BARBERIS	00E		450 $pp \to p_f\eta\eta p_s$
1770±12			[13] ANISOVICH	99B	SPEC	0.6–1.2 $p\overline{p} \to \eta\eta\pi^0$
1730±15			BARBERIS	99	OMEG	450 $pp \to p_s p_f K^+K^-$
1750±20			BARBERIS	99B	OMEG	450 $pp \to p_s p_f \pi^+\pi^-$
1710±12	±11		[14] BARBERIS	99D	OMEG	450 $pp \to K^+K^-$, $\pi^+\pi^-$
1750±30			[15] ANISOVICH	98B	RVUE	Compilation
1720±39			BAI	98H	BES	$J/\psi \to \gamma\pi^0\pi^0$
1775± 1.5		57	[16] BARKOV	98		$\pi^-p \to K^0_S K^0_S n$

1690 ± 11		[17] ABREU	96C	DLPH	$Z^0 \to K^+K^- + X$
$1696\pm\ 5$	$^{+\ 9}_{-34}$	[18] BAI	96C	BES	$J/\psi \to \gamma K^+K^-$
$1781\pm\ 8$	$^{+10}_{-31}$	BAI	96C	BES	$J/\psi \to \gamma K^+K^-$
1768 ± 14		BALOSHIN	95	SPEC	$40\ \pi^- C \to K^0_S K^0_S X$
1750 ± 15		[19] BUGG	95	MRK3	$J/\psi \to \gamma\pi^+\pi^-\pi^+\pi^-$
1620 ± 16		[18] BUGG	95	MRK3	$J/\psi \to \gamma\pi^+\pi^-\pi^+\pi^-$
1748 ± 10		[20] ARMSTRONG	93C	E760	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$
~ 1750		BREAKSTONE	93	SFM	$pp \to pp\pi^+\pi^-\pi^+\pi^-$
1744 ± 15		[21] ALDE	92D	GAM2	$38\ \pi^- p \to \eta\eta n$
1713 ± 10		[22] ARMSTRONG	89D	OMEG	$300\ pp \to ppK^+K^-$
1706 ± 10		[22] ARMSTRONG	89D	OMEG	$300\ pp \to ppK^0_S K^0_S$
1707 ± 10		[20] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+K^-$, $K^0_S K^0_S$
1700 ± 15		[18] BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
1720 ± 60		BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
1638 ± 10		[23] FALVARD	88	DM2	$J/\psi \to \phi K^+K^-$, $K^0_S K^0_S$
$1690\pm\ 4$		[24] FALVARD	88	DM2	$J/\psi \to \phi K^+K^-$, $K^0_S K^0_S$
1698 ± 15		[20] AUGUSTIN	87	DM2	$J/\psi \to \gamma\pi^+\pi^-$
1720 ± 10	±10	[18] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+K^-$
$1755\pm\ 8$		[25] ALDE	86C	GAM2	$38\ \pi^- p \to n2\eta$
$1730^{+\ 2}_{-10}$		[26] LONGACRE	86	RVUE	$22\ \pi^- p \to n2K^0_S$
1742 ± 15		[20] WILLIAMS	84	MPSF	$200\ \pi^- N \to 2K^0_S X$
1670 ± 50		BLOOM	83	CBAL	$J/\psi \to \gamma 2\eta$
1650 ± 50		BURKE	82	MRK2	$J/\psi \to \gamma 2\rho$
1640 ± 50		[27,28] EDWARDS	82D	CBAL	$J/\psi \to \gamma 2\eta$
1730 ± 10	±20	[29] ETKIN	82C	MPS	$23\ \pi^- p \to n2K^0_S$

[1] From partial wave analysis including all possible combinations of 0^{++}, 2^{++}, and 4^{++} resonances.
[2] Spin 0 favored over spin 2.
[3] In the SU(3) based model with a specific interference pattern of the $f_2(1270)$, $a^0_2(1320)$, and $f'_2(1525)$ mesons incoherently added to the $f_0(1710)$ and non-resonant background.
[4] Breit-Wigner mass.
[5] $J^P = 0^+$, supersedes by ARMSTRONG 89D.
[6] Using CLEO-c data but not authored by the CLEO Collaboration.
[7] From a fit to a Breit-Wigner line shape with fixed $\Gamma = 135$ MeV.
[8] Systematic errors not estimated.
[9] This state may be different from $f_0(1710)$, see CLOSE 05.
[10] K-matrix pole, assuming $J^P = 0^+$, 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.
[11] Decaying to $f_0(1370)\pi\pi$.
[12] T-matrix pole.
[13] Not seen by AMSLER 02.
[14] Supersedes BARBERIS 99 and BARBERIS 99B.
[15] T-matrix pole, assuming $J^P = 0^+$
[16] No J^{PC} determination.
[17] No J^{PC} determination, width not determined.

[18] $J^P = 2^+$.
[19] From a fit to the 0^+ partial wave.
[20] No J^{PC} determination.
[21] ALDE 92D combines all the GAMS-2000 data.
[22] $J^P = 2^+$, superseded by FRENCH 99.
[23] From an analysis ignoring interference with $f'_2(1525)$.
[24] From an analysis including interference with $f'_2(1525)$.
[25] Superseded by ALDE 92D.
[26] Uses MRK3 data. From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.
[27] $J^P = 2^+$ preferred.
[28] From fit neglecting nearby $f'_2(1525)$. Replaced by BLOOM 83.
[29] Superseded by LONGACRE 86.



$f_0(1710)$ WIDTH

OUR EVALUATION below is based on T-matrix poles from BARBERIS 00E and BARBERIS 99D.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
123 ± 18 OUR EVALUATION				
147^{+12}_{-10} OUR AVERAGE Error includes scale factor of 1.2.				
$172 \pm 10 ^{+32}_{-16}$	5.5k	[1] ABLIKIM 13N	BES3	$e^+e^- \to J/\psi \to \gamma\eta\eta$
$139 ^{+11}_{-12} {}^{+96}_{-50}$		[2] UEHARA 13	BELL	$\gamma\gamma \to K^0_S K^0_S$
$100 \pm 24 ^{+7}_{-22}$	4k	[3] CHEKANOV 08	ZEUS	$ep \to K^0_S K^0_S X$

$145 \pm 8 \pm 69$		[4] ABLIKIM	06V	BES2	$e^+ e^- \to J/\psi \to \gamma \pi^+ \pi^-$
125 ± 20		ABLIKIM	04E	BES2	$J/\psi \to \omega K^+ K^-$
$166 {}^{+5}_{-8} {}^{+15}_{-10}$		BAI	03G	BES	$J/\psi \to \gamma K \overline{K}$
$120 {}^{+50}_{-40}$		BAI	00A	BES	$J/\psi \to \gamma (\pi^+ \pi^- \pi^+ \pi^-)$
105 ± 34		[5] FRENCH	99		$300\ p p \to p_f (K^+ K^-) p_s$

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

$148 {}^{+40}_{-30}$		AMSLER	06	CBAR	$1.64\ \overline{p} p \to K^+ K^- \pi^0$
188 ± 13	80k	[4,6] UMAN	06	E835	$5.2\ \overline{p} p \to \eta \eta \pi^0$
250 ± 30		VLADIMIRSK...	06	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
$270 {}^{+60}_{-30}$		[7] ABLIKIM	05	BES2	$J/\psi \to \phi \pi^+ \pi^-$
$125 \pm 25 {}^{+10}_{-15}$		[4] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma \pi^+ \pi^- K^+ K^-$
260 ± 50		[4] BINON	05	GAMS	$33\ \pi^- p \to \eta \eta n$
144 ± 30		[8,9] ANISOVICH	03	RVUE	
$320 {}^{+50}_{-20}$		[9,10] ANISOVICH	03	RVUE	
102 ± 26		TIKHOMIROV	03	SPEC	$40.0\ \pi^- C \to K^0_S K^0_S K^0_L X$
267 ± 44	3651	[11] NICHITIU	02	OBLX	$0\ \overline{p} p \to K^+ K^- \pi^+ \pi^- \pi^0$
120 ± 26		[12] BARBERIS	00E		$450\ p p \to p_f \eta \eta p_s$
220 ± 40		[13,14] ANISOVICH	99B	SPEC	$0.6–1.2\ p \overline{p} \to \eta \eta \pi^0$
100 ± 25		BARBERIS	99	OMEG	$450\ p p \to p_s p_f K^+ K^-$
160 ± 30		BARBERIS	99B	OMEG	$450\ p p \to p_s p_f \pi^+ \pi^-$
$126 \pm 16 \pm 18$		[12,15] BARBERIS	99D	OMEG	$450\ p p \to K^+ K^-, \pi^+ \pi^-$
250 ± 140		[16] ANISOVICH	98B	RVUE	Compilation
30 ± 7	57	[17] BARKOV	98		$\pi^- p \to K^0_S K^0_S n$
$103 \pm 18 {}^{+30}_{-11}$		[18] BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$
$85 \pm 24 {}^{+22}_{-19}$		BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$
56 ± 19		BALOSHIN	95	SPEC	$40\ \pi^- C \to K^0_S K^0_S X$
160 ± 40		[19] BUGG	95	MRK3	$J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$
$160 {}^{+60}_{-20}$		[18] BUGG	95	MRK3	$J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$
264 ± 25		[20] ARMSTRONG	93C	E760	$\overline{p} p \to \pi^0 \eta \eta \to 6\gamma$
200 to 300		BREAKSTONE	93	SFM	$p p \to p p \pi^+ \pi^- \pi^+ \pi^-$
< 80 90% CL		[21] ALDE	92D	GAM2	$38\ \pi^- p \to \eta \eta N^*$
181 ± 30		[22] ARMSTRONG	89D	OMEG	$300\ p p \to p p K^+ K^-$
104 ± 30		[22] ARMSTRONG	89D	OMEG	$300\ p p \to p p K^0_S K^0_S$
166.4 ± 33.2		[20] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+ K^-, K^0_S K^0_S$
30 ± 20		[18] BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
350 ± 150		BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
148 ± 17		[23] FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-, K^0_S K^0_S$
184 ± 6		[24] FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-, K^0_S K^0_S$
136 ± 28		[20] AUGUSTIN	87	DM2	$J/\psi \to \gamma \pi^+ \pi^-$
130 ± 20		[18] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+ K^-$
$122 {}^{+74}_{-15}$		[25] LONGACRE	86	RVUE	$22\ \pi^- p \to n 2 K^0_S$

57 $\pm$ 38	[26]	WILLIAMS	84	MPSF	200 $\pi^- N \to 2K^0_S X$
160 $\pm$ 80		BLOOM	83	CBAL	$J/\psi \to \gamma 2\eta$
200 $\pm$100		BURKE	82	MRK2	$J/\psi \to \gamma 2\rho$
220 $^{+100}_{-\ 70}$	[27,28]	EDWARDS	82D	CBAL	$J/\psi \to \gamma 2\eta$
200 $^{+156}_{-\ \ 9}$	[29]	ETKIN	82B	MPS	23 $\pi^- p \to n 2K^0_S$

[1] From partial wave analysis including all possible combinations of 0^{++}, 2^{++}, and 4^{++} resonances.
[2] Spin 0 favored over spin 2.
[3] In the SU(3) based model with a specific interference pattern of the $f_2(1270)$, $a^0_2(1320)$, and $f'_2(1525)$ mesons incoherently added to the $f_0(1710)$ and non-resonant background.
[4] Breit-Wigner width.
[5] $J^P = 0^+$, supersedes by ARMSTRONG 89D.
[6] Systematic errors not estimated.
[7] This state may be different from $f_0(1710)$, see CLOSE 05.
[8] (Solution I)
[9] K-matrix pole, assuming $J^P = 0^+$, 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.
[10] (Solution I)
[11] Decaying to $f_0(1370)\pi\pi$.
[12] T-matrix pole.
[13] $J^P = 0^+$.
[14] Not seen by AMSLER 02.
[15] Supersedes BARBERIS 99 and BARBERIS 99B.
[16] T-matrix pole, assuming $J^P = 0^+$
[17] No J^{PC} determination.
[18] $J^P = 2^+$.
[19] From a fit to the 0^+ partial wave.
[20] No J^{PC} determination.
[21] ALDE 92D combines all the GAMS-2000 data.
[22] $J^P = 2^+$, (0^+ excluded).
[23] From an analysis ignoring interference with $f'_2(1525)$.
[24] From an analysis including interference with $f'_2(1525)$.
[25] Uses MRK3 data. From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.
[26] No J^{PC} determination.
[27] $J^P = 2^+$ preferred.
[28] From fit neglecting nearby $f'_2(1525)$. Replaced by BLOOM 83.
[29] From an amplitude analysis of the $K^0_S K^0_S$ system, superseded by LONGACRE 86.

$f_0(1710)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$K\overline{K}$	seen
Γ_2	$\eta\eta$	seen
Γ_3	$\pi\pi$	seen
Γ_4	$\gamma\gamma$	seen
Γ_5	$\omega\omega$	seen

$f_0(1710)$ Γ(i)Γ(γγ)/Γ(total)

$\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_1\Gamma_4/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
$12^{+3}_{-2}{}^{+227}_{-8}$		UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<480	95	ALBRECHT	90G	ARG	$\gamma\gamma \to K^+ K^-$
<110	95	[1] BEHREND	89C	CELL	$\gamma\gamma \to K^0_S K^0_S$
<280	95	[1] ALTHOFF	85B	TASS	$\gamma\gamma \to K\overline{K}\pi$

[1] Assuming helicity 2.

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_3\Gamma_4/\Gamma$

VALUE (keV)	CL%	DOCUMENT ID		TECN	COMMENT
<0.82	95	[1] BARATE	00E	ALEP	$\gamma\gamma \to \pi^+\pi^-$

[1] Assuming spin 0.

$f_0(1710)$ BRANCHING RATIOS

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

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	1004	[1] DOBBS	15		$J/\psi \to \gamma K^+ K^-$
seen	349	[1] DOBBS	15		$\psi(2S) \to \gamma K^+ K^-$
0.36 ± 0.12		ALBALADEJO	08	RVUE	
$0.38^{+0.09}_{-0.19}$		[2] LONGACRE	86	MPS	$22\ \pi^- p \to n 2K^0_S$

[1] Using CLEO-c data but not authored by the CLEO Collaboration.
[2] From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.

$\Gamma(\eta\eta)/\Gamma_{total}$ — Γ_2/Γ

VALUE	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.22 ± 0.12	ALBALADEJO	08	RVUE
$0.18^{+0.03}_{-0.13}$	[1] LONGACRE	86	RVUE

[1] From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.

$\Gamma(\pi\pi)/\Gamma_{total}$ — Γ_3/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	381	[1] DOBBS	15		$J/\psi \to \gamma\pi^+\pi^-$
seen	237	[1] DOBBS	15		$\psi(2S) \to \gamma\pi^+\pi^-$
not seen		AMSLER	02	CBAR	$0.9\ \overline{p}p \to \pi^0\eta\eta,\ \pi^0\pi^0\pi^0$
$0.039^{+0.002}_{-0.024}$		[2] LONGACRE	86	RVUE	

[1] Using CLEO-c data but not authored by the CLEO Collaboration.
[2] From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.

$\Gamma(\pi\pi)/\Gamma(K\overline{K})$ — Γ_3/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.23±0.05 OUR AVERAGE		Error includes scale factor of 1.2.			
0.64±0.27 ±0.18		LEES	18A	BABR	$\Upsilon(1S) \to \gamma\pi^+\pi^-$, γK^+K^-
$0.41^{+0.11}_{-0.17}$		ABLIKIM	06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$
0.2 ±0.024±0.036		BARBERIS	99D	OMEG	450 $pp \to K^+K^-$, $\pi^+\pi^-$
0.39±0.14		ARMSTRONG	91	OMEG	300 $pp \to pp\pi\pi$, $ppK\overline{K}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32±0.14		ALBALADEJO	08	RVUE	
< 0.11	95	[1] ABLIKIM	04E	BES2	$J/\psi \to \omega K^+K^-$
$5.8^{+9.1}_{-5.5}$		[2] ANISOVICH	02D	SPEC	Combined fit

[1] Using data from ABLIKIM 04A.
[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.

$\Gamma(\eta\eta)/\Gamma(K\overline{K})$ — Γ_2/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.48±0.15		BARBERIS	00E		450 $pp \to p_f\eta\eta p_s$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.46^{+0.70}_{-0.38}$		[1] ANISOVICH	02D	SPEC	Combined fit
<0.02	90	[2] PROKOSHKIN	91	GA24	300 $\pi^-p \to \pi^-p\eta\eta$

[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.
[2] Combining results of GAM4 with those of ARMSTRONG 89D.

$\Gamma(\omega\omega)/\Gamma_{total}$ — Γ_5/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	180	ABLIKIM	06H	BES	$J/\psi \to \gamma\omega\omega$

$f_0(1710)$ REFERENCES

LEES	18A	PR D97 112006	J.P. Lees et al.	(BABAR Collab.)
DOBBS	15	PR D91 052006	S. Dobbs et al.	(NWES)
ABLIKIM	13N	PR D87 092009	Ablikim M. et al.	(BESIII Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara et al.	(BELLE Collab.)
ALBALADEJO	08	PRL 101 252002	M. Albaladejo, J.A. Oller	
CHEKANOV	08	PRL 101 112003	S. Chekanov et al.	(ZEUS Collab.)
ABLIKIM	06H	PR D73 112007	M. Ablikim et al.	(BES Collab.)
ABLIKIM	06V	PL B642 441	M. Ablikim et al.	(BES Collab.)
AMSLER	06	PL B639 165	C. Amsler et al.	(CBAR Collab.)
UMAN	06	PR D73 052009	I. Uman et al.	(FNAL E835)
VLADIMIRSK...	06	PAN 69 493	V.V. Vladimirsky et al.	(ITEP, Moscow)
		Translated from YAF 69 515.		
ABLIKIM	05	PL B607 243	M. Ablikim et al.	(BES Collab.)
ABLIKIM	05Q	PR D72 092002	M. Ablikim et al.	(BES Collab.)
BINON	05	PAN 68 960	F. Binon et al.	
		Translated from YAF 68 998.		

CLOSE	05	PR D71 094022	F.E. Close, Q. Zhao	
ABLIKIM	04A	PL B598 149	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	04E	PL B603 138	M. Ablikim *et al.*	(BES Collab.)
ANISOVICH	03	EPJ A16 229	V.V. Anisovich *et al.*	
BAI	03G	PR D68 052003	J.Z. Bai *et al.*	(BES Collab.)
TIKHOMIROV	03	PAN 66 828	G.D. Tikhomirov *et al.*	
		Translated from YAF 66 860.		
AMSLER	02	EPJ C23 29	C. Amsler *et al.*	
ANISOVICH	02D	PAN 65 1545	V.V. Anisovich *et al.*	
		Translated from YAF 65 1583.		
NICHITIU	02	PL B545 261	F. Nichitiu *et al.*	(OBELIX Collab.)
BAI	00A	PL B472 207	J.Z. Bai *et al.*	(BES Collab.)
BARATE	00E	PL B472 189	R. Barate *et al.*	(ALEPH Collab.)
BARBERIS	00E	PL B479 59	D. Barberis *et al.*	(WA 102 Collab.)
ANISOVICH	99B	PL B449 154	A.V. Anisovich *et al.*	
BARBERIS	99	PL B453 305	D. Barberis *et al.*	(Omega Expt.)
BARBERIS	99B	PL B453 316	D. Barberis *et al.*	(Omega Expt.)
BARBERIS	99D	PL B462 462	D. Barberis *et al.*	(Omega Expt.)
FRENCH	99	PL B460 213	B. French *et al.*	(WA76 Collab.)
ANISOVICH	98B	SPU 41 419	V.V. Anisovich *et al.*	
		Translated from UFN 168 481.		
BAI	98H	PRL 81 1179	J.Z. Bai *et al.*	(BES Collab.)
BARKOV	98	JETPL 68 764	B.P. Barkov *et al.*	
ABREU	96C	PL B379 309	P. Abreu *et al.*	(DELPHI Collab.)
BAI	96C	PRL 77 3959	J.Z. Bai *et al.*	(BES Collab.)
BALOSHIN	95	PAN 58 46	O.N. Baloshin *et al.*	(ITEP)
		Translated from YAF 58 50.		
BUGG	95	PL B353 378	D.V. Bugg *et al.*	(LOQM, PNPI, WASH)
ARMSTRONG	93C	PL B307 394	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
BREAKSTONE	93	ZPHY C58 251	A.M. Breakstone *et al.*	(IOWA, CERN, DORT+)
ALDE	92D	PL B284 457	D.M. Alde *et al.*	(GAM2 Collab.)
Also		SJNP 54 451	D.M. Alde *et al.*	(GAM2 Collab.)
		Translated from YAF 54 745.		
ARMSTRONG	91	ZPHY C51 351	T.A. Armstrong *et al.*	(ATHU, BARI, BIRM+)
PROKOSHKIN	91	SPD 36 155	Y.D. Prokoshkin	(GAM2 and GAM4 Collab.)
		Translated from DANS 316 900.		
ALBRECHT	90G	ZPHY C48 183	H. Albrecht *et al.*	(ARGUS Collab.)
ARMSTRONG	89D	PL B227 186	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)
BEHREND	89C	ZPHY C43 91	H.J. Behrend *et al.*	(CELLO Collab.)
AUGUSTIN	88	PRL 60 2238	J.E. Augustin *et al.*	(DM2 Collab.)
BOLONKIN	88	NP B309 426	B.V. Bolonkin *et al.*	(ITEP, SERP)
FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)
AUGUSTIN	87	ZPHY C36 369	J.E. Augustin *et al.*	(LALO, CLER, FRAS+)
BALTRUSAIT...	87	PR D35 2077	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
ALDE	86C	PL B182 105	D.M. Alde *et al.*	(SERP, BELG, LANL, LAPP)
LONGACRE	86	PL B177 223	R.S. Longacre *et al.*	(BNL, BRAN, CUNY+)
ALTHOFF	85B	ZPHY C29 189	M. Althoff *et al.*	(TASSO Collab.)
WILLIAMS	84	PR D30 877	E.G.H. Williams *et al.*	(VAND, NDAM, TUFTS+)
BLOOM	83	ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)
BURKE	82	PRL 49 632	D.L. Burke *et al.*	(LBL, SLAC)
EDWARDS	82D	PRL 48 458	C. Edwards *et al.*	(CIT, HARV, PRIN+)
ETKIN	82B	PR D25 1786	A. Etkin *et al.*	(BNL, CUNY, TUFTS, VAND)
ETKIN	82C	PR D25 2446	A. Etkin *et al.*	(BNL, CUNY, TUFTS, VAND)