NODE=M068

$f_0(1710)$ $I^G(J^{PC}) = 0^+(0^{++})$

See the review on "Spectroscopy of Light Meson Resonances." NODE=M068

$f_0(1710)$ T-MATRIX POLE $\sqrt{s}$ NODE=M068PP

Note that $\Gamma = -2\ \mathrm{Im}(\sqrt{s})$. NODE=M068PP

NODE=M068PP

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
(1680–1820) − *i* (50–180) OUR ESTIMATE				
$(1769 \pm 8) - i\,(78 \pm 6)$	[1] RODAS	22	RVUE	$J/\psi(1S) \to \gamma\,(\pi\pi, K\overline{K})$
$(1700 \pm 18) - i\,(127 \pm 12)$	SARANTSEV	21	RVUE	$J/\psi(1S) \to \gamma\,(\pi\pi, K\overline{K}, \eta\eta, \omega\phi)$
$(1803 \pm 3.5^{+45.5}_{-10.4}) - i\,(145 \pm 2.5^{+16.3}_{-9.6})$	[2] ALBRECHT	20	RVUE	$0.9\ \overline{p}p \to \pi^0\pi^0\eta, \pi^0\eta\eta, \pi^0K^+K^-$
$(1732 \pm 15) - i\,(160^{+25}_{-10})$	[3] ANISOVICH	03	RVUE	$\pi\pi, K\overline{K}, \eta\eta, \eta\eta', \pi\pi\pi\pi$
$(1698 \pm 18) - i\,(60 \pm 13)$	BARBERIS	00E	OMEG	$450\ pp \to p_f\eta\eta p_s$
$(1770 \pm 12) - i\,(110 \pm 20)$	[4] ANISOVICH	99B	SPEC	$0.6–1.2\ p\overline{p} \to \eta\eta\pi^0$
$(1727 \pm 12 \pm 11) - i\,(63 \pm 8 \pm 9)$	BARBERIS	99D	OMEG	$450\ pp \to K^+K^-, \pi^+\pi^-$
$(1750 \pm 30) - i\,(125 \pm 70)$	ANISOVICH	98B	RVUE	Compilation

→ UNCHECKED ←

OCCUR=3

[1] T-matrix pole from coupled channel K-matrix fit to data on $J/\psi \to \gamma\pi^0\pi^0$ (ABLIKIM 15AE) and $J/\psi \to \gamma K^0_S K^0_S$ (ABLIKIM 18AA). NODE=M068PP;LINKAGE=O

[2] T-matrix pole, 5 poles, 5 channels, including scattering data from HYAMS 75 ($\pi\pi$), LONGACRE 86 ($K\overline{K}$), BINON 83 ($\eta\eta$), and BINON 84C ($\eta\eta'$). NODE=M068PP;LINKAGE=H

[3] Solution I. NODE=M068PP;LINKAGE=A

[4] Not seen by AMSLER 02. NODE=M068PP;LINKAGE=AV

$f_0(1710)$ Breit-Wigner MASS NODE=M068M

NODE=M068M

VALUE (MeV)		EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{1733^{+8}_{-7}}$ **OUR AVERAGE**			Error includes scale factor of 1.5. See the ideogram below.			
1757 ± 24	± 9		LEES	21A	BABR	$\eta_c(1S) \to \eta' K^+K^-$
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		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			[4] 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	[5,6] DOBBS	15		$J/\psi \to \gamma\pi^+\pi^-$
1705 ± 11	± 5	237	[5,6] DOBBS	15		$\psi(2S) \to \gamma\pi^+\pi^-$
1706 ± 4	± 5	1.0k	[5,6] DOBBS	15		$J/\psi \to \gamma K^+K^-$
1690 ± 8	± 3	349	[5,6] 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	[7] UMAN	06	E835	$5.2\ \overline{p}p \to \eta\eta\pi^0$
1776 ± 15			VLADIMIRSK...	06	SPEC	$40\ \pi^-p \to K^0_S K^0_S n$
1670 ± 20			BINON	05	GAMS	$33\ \pi^-p \to \eta\eta n$
1682 ± 16			TIKHOMIROV	03	SPEC	$40.0\ \pi^-\mathrm{C} \to K^0_S K^0_S K^0_L X$
1670 ± 26		3.6k	[8] NICHITIU	02	OBLX	$0\ \overline{p}p \to K^+K^-\pi^+\pi^-\pi^0$
1730 ± 15			BARBERIS	99	OMEG	$450\ pp \to p_s p_f K^+K^-$
1750 ± 20			BARBERIS	99B	OMEG	$450\ pp \to p_s p_f \pi^+\pi^-$
1720 ± 39			BAI	98H	BES	$J/\psi \to \gamma\pi^0\pi^0$
1775 ± 1.5		57	[9] BARKOV	98		$\pi^-p \to K^0_S K^0_S n$
1690 ± 11			[10] ABREU	96C	DLPH	$Z^0 \to K^+K^- + X$
1696 ± 5	$^{+9}_{-34}$		[11] BAI	96C	BES	$J/\psi \to \gamma K^+K^-$

OCCUR=2
OCCUR=3
OCCUR=4

1781 ± 8	$^{+10}_{-31}$	BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$	OCCUR=2
1768 ± 14		BALOSHIN	95	SPEC	$40\ \pi^- \mathrm{C} \to K^0_S K^0_S X$	
1750 ± 15		[12] BUGG	95	MRK3	$J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$	
1620 ± 16		[11] BUGG	95	MRK3	$J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$	OCCUR=2
1748 ± 10		[13] ARMSTRONG	93C	E760	$\overline{p} p \to \pi^0 \eta \eta \to 6\gamma$	
~ 1750		BREAKSTONE	93	SFM	$p p \to p p \pi^+ \pi^- \pi^+ \pi^-$	
1744 ± 15		[14] ALDE	92D	GAM2	$38\ \pi^- p \to \eta \eta n$	
1713 ± 10		[15] ARMSTRONG	89D	OMEG	$300\ p p \to p p K^+ K^-$	
1706 ± 10		[15] ARMSTRONG	89D	OMEG	$300\ p p \to p p K^0_S K^0_S$	OCCUR=2
1707 ± 10		[13] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+ K^-,\ K^0_S K^0_S$	
1700 ± 15		[11] BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$	
1720 ± 60		BOLONKIN	88	SPEC	$40\ \pi^- p \to K^0_S K^0_S n$	OCCUR=2
1638 ± 10		[16] FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-,\ K^0_S K^0_S$	
1690 ± 4		[17] FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-,\ K^0_S K^0_S$	OCCUR=2
1698 ± 15		[13] AUGUSTIN	87	DM2	$J/\psi \to \gamma \pi^+ \pi^-$	
1720 ± 10	± 10	[11] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+ K^-$	
1755 ± 8		[18] ALDE	86C	GAM2	$38\ \pi^- p \to n 2\eta$	
1730^{+2}_{-10}		[19] LONGACRE	86	RVUE	$22\ \pi^- p \to n 2K^0_S$	
1742 ± 15		[13] 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		[20,21] EDWARDS	82D	CBAL	$J/\psi \to \gamma 2\eta$	
1730 ± 10	± 20	[22] ETKIN	82C	MPS	$23\ \pi^- p \to n 2K^0_S$	

[1] From partial wave analysis including all possible combinations of 0^{++}, 2^{++}, and 4^{++} resonances. NODE=M068M;LINKAGE=D

[2] Spin 0 favored over spin 2. NODE=M068M;LINKAGE=H

[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. NODE=M068M;LINKAGE=HE

[4] $J^P = 0^+$, supersedes ARMSTRONG 89D. NODE=M068M;LINKAGE=C3

[5] Using CLEO-c data but not authored by the CLEO Collaboration. NODE=M068M;LINKAGE=F

[6] From a fit to a Breit-Wigner line shape with fixed $\Gamma = 135$ MeV. NODE=M068M;LINKAGE=G

[7] Systematic errors not estimated. NODE=M068M;LINKAGE=CH

[8] Decaying to $f_0(1370)\pi\pi$. NODE=M068M;LINKAGE=NC

[9] No J^{PC} determination. NODE=M068M;LINKAGE=4A

[10] No J^{PC} determination, width not determined. NODE=M068M;LINKAGE=A4

[11] $J^P = 2^+$. NODE=M068M;LINKAGE=A3

[12] From a fit to the 0^+ partial wave. NODE=M068M;LINKAGE=Q0

[13] No J^{PC} determination. NODE=M068M;LINKAGE=A1

[14] ALDE 92D combines all the GAMS-2000 data. NODE=M068M;LINKAGE=AA

[15] $J^P = 2^+$, superseded by FRENCH 99. NODE=M068M;LINKAGE=C

[16] From an analysis ignoring interference with $f'_2(1525)$. NODE=M068M;LINKAGE=A

[17] From an analysis including interference with $f'_2(1525)$. NODE=M068M;LINKAGE=B

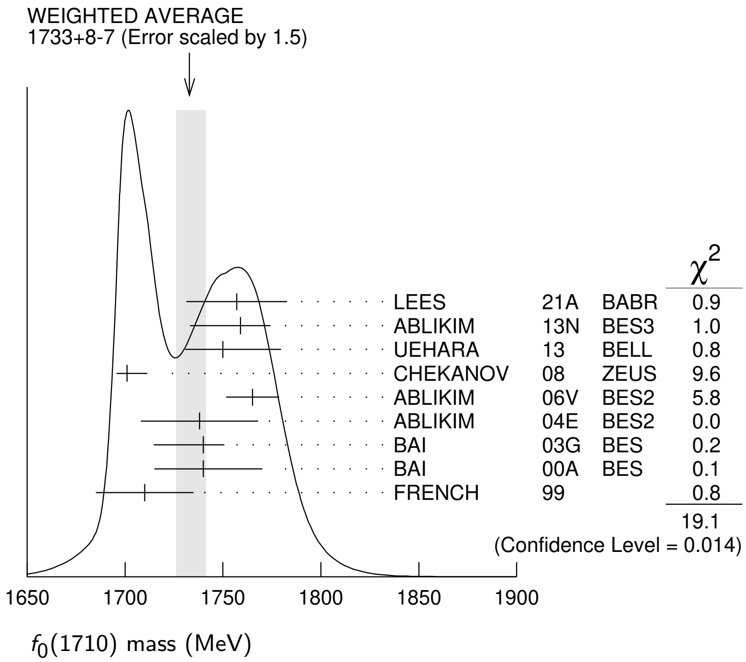
[18] Superseded by ALDE 92D. NODE=M068M;LINKAGE=BB

[19] 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. NODE=M068M;LINKAGE=A9

[20] $J^P = 2^+$ preferred. NODE=M068M;LINKAGE=B2

[21] From fit neglecting nearby $f'_2(1525)$. Replaced by BLOOM 83. NODE=M068M;LINKAGE=E

[22] Superseded by LONGACRE 86. NODE=M068M;LINKAGE=B1



$f_0(1710)$ Breit-Wigner WIDTH

NODE=M068W

NODE=M068W

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT	
150^{+12}_{-10} OUR AVERAGE				Error includes scale factor of 1.3. See the ideogram below.	
$175 \pm 23 \pm 4$		LEES	21A	BABR	$\eta_c(1S) \to \eta' K^+ K^-$
$172 \pm 10 ^{+32}_{-16}$	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	$e p \to K^0_S K^0_S X$
$145 \pm 8 \pm 69$		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		[4] 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	[5] UMAN	06	E835	$5.2\ \overline{p} p \to \eta \eta \pi^0$
250 ± 30		VLADIMIRSK...06		SPEC	$40\ \pi^- p \to K^0_S K^0_S n$
260 ± 50		BINON	05	GAMS	$33\ \pi^- p \to \eta \eta n$
102 ± 26		TIKHOMIROV	03	SPEC	$40.0\ \pi^- C \to K^0_S K^0_S K^0_L X$
267 ± 44	3651	[6] NICHITIU	02	OBLX	$0\ \overline{p} p \to K^+ K^- \pi^+ \pi^- \pi^0$
100 ± 25		BARBERIS	99	OMEG	$450\ p p \to p_s p_f K^+ K^-$
160 ± 30		BARBERIS	99B	OMEG	$450\ p p \to p_s p_f \pi^+ \pi^-$
30 ± 7	57	[7] BARKOV	98		$\pi^- p \to K^0_S K^0_S n$
$103 \pm 18 ^{+30}_{-11}$		[8] BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$
$85 \pm 24 ^{+22}_{-19}$		BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$	OCCUR=2
56 ± 19		BALOSHIN	95	SPEC	$40\ \pi^- C \to K^0_S K^0_S X$
160 ± 40		[9] BUGG	95	MRK3	$J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$
$160 ^{+60}_{-20}$		[8] BUGG	95	MRK3	$J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$	OCCUR=2
264 ± 25		[10] 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		[11] ALDE	92D	GAM2	$38\ \pi^- p \to \eta \eta N^*$
181 ± 30		[12] ARMSTRONG	89D	OMEG	$300\ p p \to p p K^+ K^-$

104 ± 30	[12] ARMSTRONG	89D	OMEG	300 $pp \to ppK^0_S K^0_S$	OCCUR=2
166.4 ± 33.2	[10] AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+ K^-, K^0_S K^0_S$	
30 ± 20	[8] BOLONKIN	88	SPEC	40 $\pi^- p \to K^0_S K^0_S n$	
350 ± 150	BOLONKIN	88	SPEC	40 $\pi^- p \to K^0_S K^0_S n$	OCCUR=2
148 ± 17	[13] FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-, K^0_S K^0_S$	
184 ± 6	[14] FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-, K^0_S K^0_S$	OCCUR=2
136 ± 28	[10] AUGUSTIN	87	DM2	$J/\psi \to \gamma \pi^+ \pi^-$	
130 ± 20	[8] BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+ K^-$	
122 $^{+74}_{-15}$	[15] LONGACRE	86	RVUE	22 $\pi^- p \to n 2K^0_S$	
57 ± 38	[16] WILLIAMS	84	MPSF	200 $\pi^- N \to 2K^0_S X$	
160 ± 80	BLOOM	83	CBAL	$J/\psi \to \gamma 2\eta$	
200 ± 100	BURKE	82	MRK2	$J/\psi \to \gamma 2\rho$	
220 $^{+100}_{-70}$	[17,18] EDWARDS	82D	CBAL	$J/\psi \to \gamma 2\eta$	
200 $^{+156}_{-9}$	[19] 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. NODE=M068W;LINKAGE=F

[2] Spin 0 favored over spin 2. NODE=M068W;LINKAGE=G

[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. NODE=M068W;LINKAGE=HE

[4] $J^P = 0^+$, supersedes ARMSTRONG 89D. NODE=M068W;LINKAGE=C3

[5] Systematic errors not estimated. NODE=M068W;LINKAGE=CH

[6] Decaying to $f_0(1370)\pi\pi$. NODE=M068W;LINKAGE=NC

[7] No J^{PC} determination. NODE=M068W;LINKAGE=4A

[8] $J^P = 2^+$. NODE=M068W;LINKAGE=A3

[9] From a fit to the 0^+ partial wave. NODE=M068W;LINKAGE=Q0

[10] No J^{PC} determination. NODE=M068W;LINKAGE=A1

[11] ALDE 92D combines all the GAMS-2000 data. NODE=M068W;LINKAGE=AA

[12] $J^P = 2^+$, (0^+ excluded). NODE=M068W;LINKAGE=B

[13] From an analysis ignoring interference with $f'_2(1525)$. NODE=M068W;LINKAGE=C

[14] From an analysis including interference with $f'_2(1525)$. NODE=M068W;LINKAGE=D

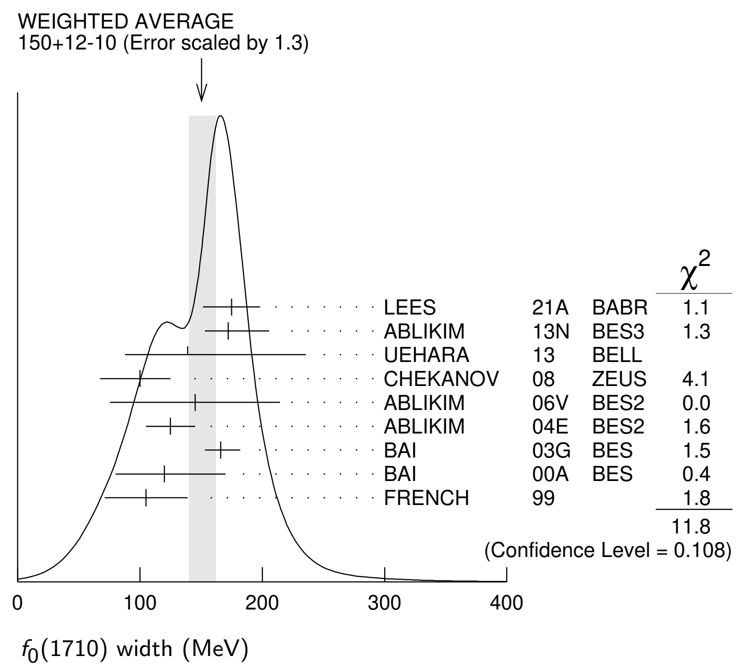
[15] Uses MRK3 data. From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity. NODE=M068W;LINKAGE=A9

[16] No J^{PC} determination. NODE=M068M;LINKAGE=WI

[17] $J^P = 2^+$ preferred. NODE=M068W;LINKAGE=B2

[18] From fit neglecting nearby $f'_2(1525)$. Replaced by BLOOM 83. NODE=M068W;LINKAGE=E

[19] From an amplitude analysis of the $K^0_S K^0_S$ system, superseded by LONGACRE 86. NODE=M068W;LINKAGE=A



$f_0(1710)$ DECAY MODES

NODE=M068215;NODE=M068

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$K\overline{K}$	seen	DESIG=2;OUR EST;→ UNCHECKED ←
Γ_2	$\eta\eta$	seen	DESIG=1;OUR EST;→ UNCHECKED ←
Γ_3	$\eta\eta'$	not seen	DESIG=7;OUR EST;→ UNCHECKED ←
Γ_4	$\pi\pi$	seen	DESIG=5;OUR EST;→ UNCHECKED ←
Γ_5	$\gamma\gamma$	seen	DESIG=6;OUR EST;→ UNCHECKED ←
Γ_6	$\omega\omega$	seen	DESIG=4

$f_0(1710)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

NODE=M068220

$\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_1\Gamma_5/\Gamma$

NODE=M068G2
NODE=M068G2

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{12^{+3}_{-2}{}^{+227}_{-\ 8}}$		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.

NODE=M068G2;LINKAGE=F

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_4\Gamma_5/\Gamma$

NODE=M068G3
NODE=M068G3

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

[1] Assuming spin 0.

NODE=M068G;LINKAGE=Z

$f_0(1710)$ BRANCHING RATIOS

NODE=M068225

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

NODE=M068R2
NODE=M068R2

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	$22\ \pi^- p \to n 2K^0_S$

OCCUR=2

[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.

NODE=M068R2;LINKAGE=A
NODE=M068R;LINKAGE=L

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

NODE=M068R1
NODE=M068R1

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.

NODE=M068R1;LINKAGE=L

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

NODE=M068R7
NODE=M068R7

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.

NODE=M068R7;LINKAGE=CH
NODE=M068R;LINKAGE=A

$\Gamma(\pi\pi)/\Gamma_{total}$ Γ_4/Γ

NODE=M068R5
NODE=M068R5

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	

OCCUR=2

[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.

NODE=M068R5;LINKAGE=A
NODE=M068R5;LINKAGE=L

$\Gamma(\pi\pi)/\Gamma(K\overline{K})$ Γ_4/Γ_1

NODE=M068R6
NODE=M068R6

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.

NODE=M068R;LINKAGE=AB
NODE=M068R;LINKAGE=CH

$\Gamma(\eta\eta')/\Gamma(\pi\pi)$ Γ_3/Γ_4

NODE=M068R00
NODE=M068R00

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<2.87 \times 10^{-3}$	90	[1] ABLIKIM 22AS	BES3	$J/\psi(1S) \to \gamma\eta\eta'$

[1] From a Breit-Wigner fit involving 9 resonances and a resonating exotic $\eta_1(1855) \to \eta\eta'$ *P*-wave.

NODE=M068R00;LINKAGE=A

$\Gamma(\omega\omega)/\Gamma_{total}$ Γ_6/Γ

NODE=M068R3
NODE=M068R3

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

$f_0(1710)$ REFERENCES

NODE=M068

ABLIKIM	22AS	PR D106 072012	M. Ablikim *et al.*	(BESIII Collab.)	REFID=61891
Also		PR D107 079901 (errat.)	M. Ablikim *et al.*	(BESIII Collab.)	REFID=62033
RODAS	22	EPJ C82 80	A. Rodas *et al.*	(JPAC Collab.)	REFID=61610
LEES	21A	PR D104 072002	J.P. Lees *et al.*	(BABAR Collab.)	REFID=61442
SARANTSEV	21	PL B816 136227	A.V. Sarantsev *et al.*	(BONN, PNPI)	REFID=61091
ALBRECHT	20	EPJ C80 453	M. Albrecht *et al.*	(Crystal Barrel Collab.)	REFID=60439
ABLIKIM	18AA	PR D98 072003	M. Ablikim *et al.*	(BESIII Collab.)	REFID=59455
LEES	18A	PR D97 112006	J.P. Lees *et al.*	(BABAR Collab.)	REFID=58950
ABLIKIM	15AE	PR D92 052003	M. Ablikim *et al.*	(BESIII Collab.)	REFID=56984
DOBBS	15	PR D91 052006	S. Dobbs *et al.*	(NWES)	REFID=56805
ABLIKIM	13N	PR D87 092009	M. Ablikim *et al.*	(BESIII Collab.)	REFID=55387
UEHARA	13	PTEP 2013 123C01	S. Uehara *et al.*	(BELLE Collab.)	REFID=55592
ALBALADEJO	08	PRL 101 252002	M. Albaladejo, J.A. Oller		REFID=52656
CHEKANOV	08	PRL 101 112003	S. Chekanov *et al.*	(ZEUS Collab.)	REFID=52275
ABLIKIM	06H	PR D73 112007	M. Ablikim *et al.*	(BES Collab.)	REFID=51125
ABLIKIM	06V	PL B642 441	M. Ablikim *et al.*	(BES Collab.)	REFID=51507
AMSLER	06	PL B639 165	C. Amsler *et al.*	(Crystal Barrel Collab.)	REFID=51136
UMAN	06	PR D73 052009	I. Uman *et al.*	(FNAL E835)	REFID=51063
VLADIMIRSK...	06	PAN 69 493 Translated from YAF 69 515.	V.V. Vladimirsky *et al.*	(ITEP, Moscow)	REFID=51191
BINON	05	PAN 68 960 Translated from YAF 68 998.	F. Binon *et al.*		REFID=50780
ABLIKIM	04A	PL B598 149	M. Ablikim *et al.*	(BES Collab.)	REFID=49740
ABLIKIM	04E	PL B603 138	M. Ablikim *et al.*	(BES Collab.)	REFID=50174
ANISOVICH	03	EPJ A16 229	V.V. Anisovich *et al.*		REFID=49401
BAI	03G	PR D68 052003	J.Z. Bai *et al.*	(BES Collab.)	REFID=49580
TIKHOMIROV	03	PAN 66 828 Translated from YAF 66 860.	G.D. Tikhomirov *et al.*		REFID=49423
AMSLER	02	EPJ C23 29	C. Amsler *et al.*	(Crystal Barrel Collab.)	REFID=48580
ANISOVICH	02D	PAN 65 1545 Translated from YAF 65 1583.	V.V. Anisovich *et al.*		REFID=48831

NICHITIU	02	PL B545 261	F. Nichitiu *et al.*	(OBELIX Collab.)	REFID=48848
BAI	00A	PL B472 207	J.Z. Bai *et al.*	(BES Collab.)	REFID=47426
BARATE	00E	PL B472 189	R. Barate *et al.*	(ALEPH Collab.)	REFID=47428
BARBERIS	00E	PL B479 59	D. Barberis *et al.*	(WA 102 Collab.)	REFID=47961
ANISOVICH	99B	PL B449 154	A.V. Anisovich *et al.*		REFID=46886
BARBERIS	99	PL B453 305	D. Barberis *et al.*	(Omega Expt.)	REFID=46921
BARBERIS	99B	PL B453 316	D. Barberis *et al.*	(Omega Expt.)	REFID=46922
BARBERIS	99D	PL B462 462	D. Barberis *et al.*	(Omega Expt.)	REFID=47395
FRENCH	99	PL B460 213	B. French *et al.*	(WA76 Collab.)	REFID=47491
ANISOVICH	98B	SPU 41 419	V.V. Anisovich *et al.*		REFID=46331
		Translated from UFN 168 481.			
BAI	98H	PRL 81 1179	J.Z. Bai *et al.*	(BES Collab.)	REFID=46342
BARKOV	98	JETPL 68 764	B.P. Barkov *et al.*		REFID=46616
ABREU	96C	PL B379 309	P. Abreu *et al.*	(DELPHI Collab.)	REFID=44671
BAI	96C	PRL 77 3959	J.Z. Bai *et al.*	(BES Collab.)	REFID=45169
BALOSHIN	95	PAN 58 46	O.N. Baloshin *et al.*	(ITEP)	REFID=44621
		Translated from YAF 58 50.			
BUGG	95	PL B353 378	D.V. Bugg *et al.*	(LOQM, PNPI, WASH)	REFID=44438
ARMSTRONG	93C	PL B307 394	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)	REFID=43587
BREAKSTONE	93	ZPHY C58 251	A.M. Breakstone *et al.*	(IOWA, CERN, DORT+)	REFID=43312
ALDE	92D	PL B284 457	D.M. Alde *et al.*	(GAM2 Collab.)	REFID=41591
Also		SJNP 54 451	D.M. Alde *et al.*	(GAM2 Collab.)	REFID=44696
		Translated from YAF 54 745.			
ARMSTRONG	91	ZPHY C51 351	T.A. Armstrong *et al.*	(ATHU, BARI, BIRM+)	REFID=41744
PROKOSHKIN	91	SPD 36 155	Y.D. Prokoshkin	(GAM2 and GAM4 Collab.)	REFID=41719
		Translated from DANS 316 900.			
ALBRECHT	90G	ZPHY C48 183	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=41374
ARMSTRONG	89D	PL B227 186	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)	REFID=41010
BEHREND	89C	ZPHY C43 91	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=40915
AUGUSTIN	88	PRL 60 2238	J.E. Augustin *et al.*	(DM2 Collab.)	REFID=40574
BOLONKIN	88	NP B309 426	B.V. Bolonkin *et al.*	(ITEP, SERP)	REFID=40580
FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)	REFID=40576
AUGUSTIN	87	ZPHY C36 369	J.E. Augustin *et al.*	(LALO, CLER, FRAS+)	REFID=40268
BALTRUSAIT...	87	PR D35 2077	R.M. Baltrusaitis *et al.*	(Mark III Collab.)	REFID=40010
ALDE	86C	PL B182 105	D.M. Alde *et al.*	(SERP, BELG, LANL, LAPP)	REFID=21694
LONGACRE	86	PL B177 223	R.S. Longacre *et al.*	(BNL, BRAN, CUNY+)	REFID=20768
ALTHOFF	85B	ZPHY C29 189	M. Althoff *et al.*	(TASSO Collab.)	REFID=21349
BINON	84C	NC 80A 363	F.G. Binon *et al.*	(BELG, LAPP, SERP+)	REFID=21418
WILLIAMS	84	PR D30 877	E.G.H. Williams *et al.*	(VAND, NDAM, TUFTS+)	REFID=21693
BINON	83	NC 78A 313	F.G. Binon *et al.*	(BELG, LAPP, SERP+)	REFID=20750
BLOOM	83	ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)	REFID=21682
BURKE	82	PRL 49 632	D.L. Burke *et al.*	(LBL, SLAC)	REFID=21676
EDWARDS	82D	PRL 48 458	C. Edwards *et al.*	(CIT, HARV, PRIN+)	REFID=21677
ETKIN	82B	PR D25 1786	A. Etkin *et al.*	(BNL, CUNY, TUFTS, VAND)	REFID=20390
ETKIN	82C	PR D25 2446	A. Etkin *et al.*	(BNL, CUNY, TUFTS, VAND)	REFID=20391
HYAMS	75	NP B100 205	B.D. Hyams *et al.*	(CERN, MPIM)	REFID=20355