

# $f_0(1710)$

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

Evidence for two isoscalar scales,  $f_0(1710)$  and  $f_0(1810)$ , was first reported by SARANTSEV 21 and ABLIKIM 22F. The data assignments to either  $f_0(1710)$  or  $f_0(1810)$  are tentative. See the review on "Spectroscopy of Light Meson Resonances."

## $f_0(1710)$ T-MATRIX POLE $\sqrt{s}$

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>(1680–1820) – i (50–180) OUR ESTIMATE</b>			
$(1770.7 \pm 5.1 \pm 4.2)$ – $i(84.7 \pm 3.8 \pm 4.7)$	ABLIKIM	25CD BES3	$e^+e^- \rightarrow \psi(2S)$
$(1769 \pm 8) - i(78 \pm 6)$	<sup>1</sup> RODAS	22 RVUE	$J/\psi(1S) \rightarrow \gamma(\pi\pi, K\bar{K})$
$(1700 \pm 18) - i(127 \pm 12)$	SARANTSEV	21 RVUE	$J/\psi(1S) \rightarrow \gamma(\pi\pi, K\bar{K}, \eta\eta, \omega\phi)$
$(1732 \pm 15) - i(160_{-10}^{+25})$	<sup>2</sup> ANISOVICH	03 RVUE	$\pi\pi, K\bar{K}, \eta\eta, \eta\eta', \pi\pi\pi\pi$
$(1698 \pm 18) - i(60 \pm 13)$	BARBERIS	00E OMEG	450 $pp \rightarrow p_f\eta\eta p_s$
$(1770 \pm 12) - i(110 \pm 20)$	<sup>3</sup> ANISOVICH	99B SPEC	0.6–1.2 $p\bar{p} \rightarrow \eta\eta\pi^0$
$(1727 \pm 12 \pm 11) - i(63 \pm 8 \pm 9)$	BARBERIS	99D OMEG	450 $pp \rightarrow K^+K^-, \pi^+\pi^-$
$(1750 \pm 30) - i(125 \pm 70)$	ANISOVICH	98B RVUE	Compilation

<sup>1</sup> T-matrix pole from coupled channel K-matrix fit to data on  $J/\psi \rightarrow \gamma\pi^0\pi^0$  (ABLIKIM 15AE) and  $J/\psi \rightarrow \gamma K_S^0 K_S^0$  (ABLIKIM 18AA).

<sup>2</sup> Solution I.

<sup>3</sup> Not seen by AMSLER 02.

## $f_0(1710)$ Breit-Wigner MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>1723_{-6}^{+7}</math></b>		<b>OUR AVERAGE</b>		Error includes scale factor of 1.3. See the ideogram below.
$1723 \pm 11 \pm 2$		ABLIKIM	22F BES3	$D_s^+ \rightarrow K_S^0 K_S^0 \pi^+$
$1757 \pm 24 \pm 9$		LEES	21A BABR	$\eta_c(1S) \rightarrow \eta' K^+ K^-$
$1759 \pm 6 \pm 14_{-25}$	5.5k	<sup>1</sup> ABLIKIM	13N BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\eta\eta$
$1750_{-7}^{+6} \pm 29_{-18}$		<sup>2</sup> UEHARA	13 BELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$
$1701 \pm 5 \pm 9_{-2}$	4k	<sup>3</sup> CHEKANOV	08 ZEUS	$ep \rightarrow K_S^0 K_S^0 X$
$1738 \pm 30$		ABLIKIM	04E BES2	$J/\psi \rightarrow \omega K^+ K^-$
$1740 \pm 4 \pm 10_{-25}$		BAI	03G BES	$J/\psi \rightarrow \gamma K\bar{K}$
$1710 \pm 25$		<sup>4</sup> FRENCH	99	300 $pp \rightarrow p_f(K^+K^-)p_s$
$1744 \pm 7 \pm 5$	381	<sup>5,6</sup> DOBBS	15	$J/\psi \rightarrow \gamma\pi^+\pi^-$

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

1705±11	± 5	237	5,6	DOBBS	15		$\psi(2S) \rightarrow \gamma\pi^+\pi^-$
1706± 4	± 5	1.0k	5,6	DOBBS	15		$J/\psi \rightarrow \gamma K^+ K^-$
1690± 8	± 3	349	5,6	DOBBS	15		$\psi(2S) \rightarrow \gamma K^+ K^-$
1750±13				AMSLER	06	CBAR	$1.64 \bar{p}p \rightarrow K^+ K^- \pi^0$
1747± 5		80k	7	UMAN	06	E835	$5.2 \bar{p}p \rightarrow \eta\eta\pi^0$
1776±15				VLADIMIRSK...	06	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
1670±20				BINON	05	GAMS	$33 \pi^- p \rightarrow \eta\eta n$
1682±16				TIKHOMIROV	03	SPEC	$40.0 \pi^- C \rightarrow K_S^0 K_S^0 K_L^0 X$
1670±26	3.6k		8	NICHITIU	02	OBLX	$0 \bar{p}p \rightarrow K^+ K^- \pi^+ \pi^- \pi^0$
1730±15				BARBERIS	99	OMEG	$450 pp \rightarrow p_s p_f K^+ K^-$
1750±20				BARBERIS	99B	OMEG	$450 pp \rightarrow p_s p_f \pi^+ \pi^-$
1720±39				BAI	98H	BES	$J/\psi \rightarrow \gamma\pi^0\pi^0$
1775± 1.5		57	9	BARKOV	98		$\pi^- p \rightarrow K_S^0 K_S^0 n$
1690±11			10	ABREU	96C	DLPH	$Z^0 \rightarrow K^+ K^- + X$
1696± 5	+ 9 - 34		11	BAI	96C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
1781± 8	+10 -31			BAI	96C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
1768±14				BALOSHIN	95	SPEC	$40 \pi^- C \rightarrow K_S^0 K_S^0 X$
1750±15			12	BUGG	95	MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
1620±16			11	BUGG	95	MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
1748±10			13	ARMSTRONG	93C	E760	$\bar{p}p \rightarrow \pi^0\eta\eta \rightarrow 6\gamma$
~ 1750				BREAKSTONE	93	SFM	$pp \rightarrow pp\pi^+\pi^-\pi^+\pi^-$
1744±15			14	ALDE	92D	GAM2	$38 \pi^- p \rightarrow \eta\eta n$
1713±10			15	ARMSTRONG	89D	OMEG	$300 pp \rightarrow ppK^+ K^-$
1706±10			15	ARMSTRONG	89D	OMEG	$300 pp \rightarrow ppK_S^0 K_S^0$
1707±10			13	AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^+ K^-, K_S^0 K_S^0$
1700±15			11	BOLONKIN	88	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
1720±60				BOLONKIN	88	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
1638±10			16	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
1690± 4			17	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
1698±15			13	AUGUSTIN	87	DM2	$J/\psi \rightarrow \gamma\pi^+\pi^-$
1720±10	±10		11	BALTRUSAIT..	87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$
1755± 8			18	ALDE	86C	GAM2	$38 \pi^- p \rightarrow n2\eta$
1730 <sup>+</sup> <sub>-10</sub> <sup>2</sup>			19	LONGACRE	86	RVUE	$22 \pi^- p \rightarrow n2K_S^0$
1742±15			13	WILLIAMS	84	MPSF	$200 \pi^- N \rightarrow 2K_S^0 X$
1670±50				BLOOM	83	CBAL	$J/\psi \rightarrow \gamma2\eta$
1650±50				BURKE	82	MRK2	$J/\psi \rightarrow \gamma2\rho$
1640±50		20,21	EDWARDS	82D	CBAL	$J/\psi \rightarrow \gamma2\eta$	
1730±10	±20		22	ETKIN	82C	MPS	$23 \pi^- p \rightarrow n2K_S^0$

<sup>1</sup> From partial wave analysis including all possible combinations of  $0^{++}$ ,  $2^{++}$ , and  $4^{++}$  resonances.

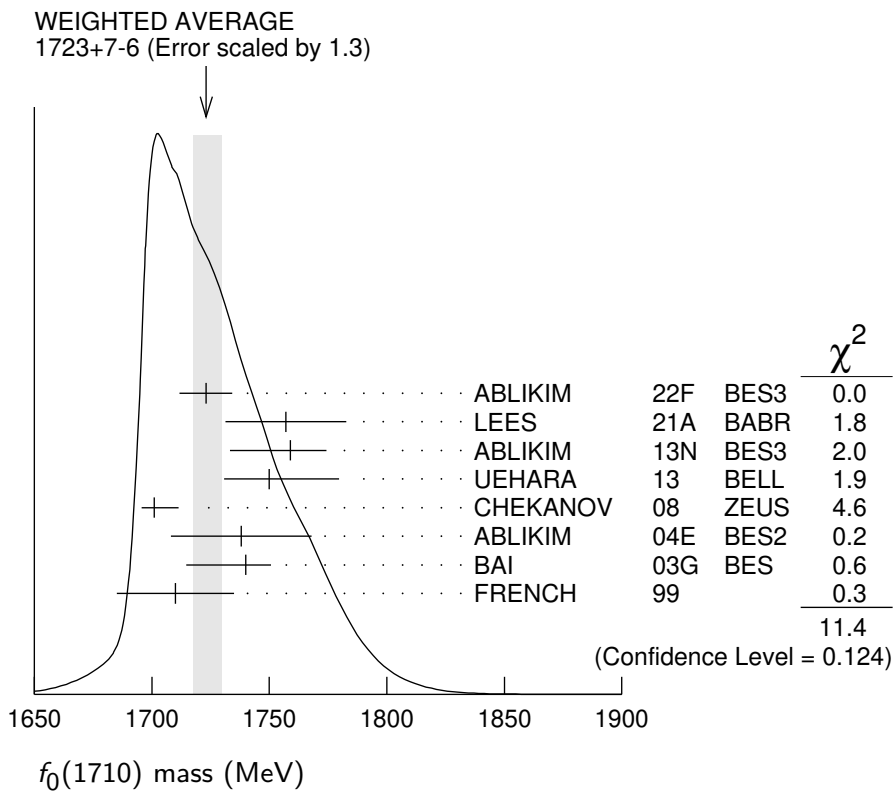
<sup>2</sup> Spin 0 favored over spin 2.

<sup>3</sup> In the SU(3) based model with a specific interference pattern of the  $f_2(1270)$ ,  $a_2^0(1320)$ , and  $f_2'(1525)$  mesons incoherently added to the  $f_0(1710)$  and non-resonant background.

<sup>4</sup>  $J^P = 0^+$ , supersedes ARMSTRONG 89D.

<sup>5</sup> Using CLEO-c data but not authored by the CLEO Collaboration.

- 6 From a fit to a Breit-Wigner line shape with fixed  $\Gamma = 135$  MeV.
- 7 Systematic errors not estimated.
- 8 Decaying to  $f_0(1370)\pi\pi$ .
- 9 No  $J^{PC}$  determination.
- 10 No  $J^{PC}$  determination, width not determined.
- 11  $J^P = 2^+$ .
- 12 From a fit to the  $0^+$  partial wave.
- 13 No  $J^{PC}$  determination.
- 14 ALDE 92D combines all the GAMS-2000 data.
- 15  $J^P = 2^+$ , superseded by FRENCH 99.
- 16 From an analysis ignoring interference with  $f'_2(1525)$ .
- 17 From an analysis including interference with  $f'_2(1525)$ .
- 18 Superseded by ALDE 92D.
- 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.
- 20  $J^P = 2^+$  preferred.
- 21 From fit neglecting nearby  $f'_2(1525)$ . Replaced by BLOOM 83.
- 22 Superseded by LONGACRE 86.



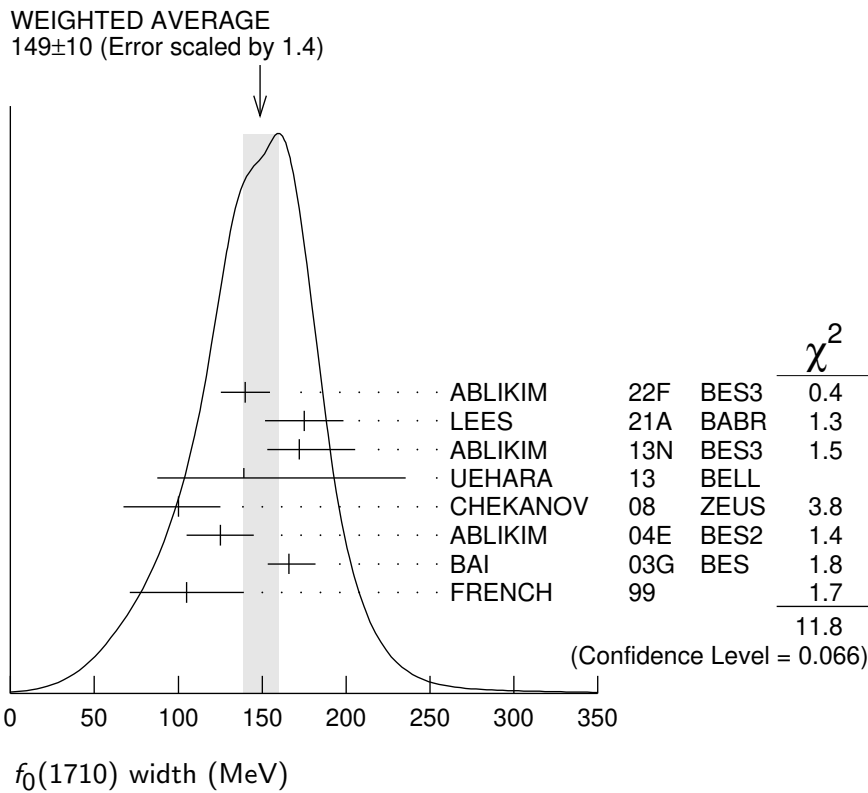
### $f_0(1710)$ Breit-Wigner WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>149 ± 10</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.4. See the ideogram below.		
140 ± 14 ± 4		ABLIKIM	22F BES3	$D_s^+ \rightarrow K_S^0 K_S^0 \pi^+$
175 ± 23 ± 4		LEES	21A BABR	$\eta_c(1S) \rightarrow \eta' K^+ K^-$
172 ± 10 $\begin{smallmatrix} +32 \\ -16 \end{smallmatrix}$	5.5k	<sup>1</sup> ABLIKIM	13N BES3	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \eta \eta$

139	$\begin{matrix} +11 \\ -12 \end{matrix}$	$\begin{matrix} +96 \\ -50 \end{matrix}$		2	UEHARA	13	BELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$
100	$\pm 24$	$\begin{matrix} +7 \\ -22 \end{matrix}$	4k	3	CHEKANOV	08	ZEUS	$e p \rightarrow K_S^0 K_S^0 X$
125	$\pm 20$				ABLIKIM	04E	BES2	$J/\psi \rightarrow \omega K^+ K^-$
166	$\begin{matrix} +5 \\ -8 \end{matrix}$	$\begin{matrix} +15 \\ -10 \end{matrix}$			BAI	03G	BES	$J/\psi \rightarrow \gamma K \bar{K}$
105	$\pm 34$			4	FRENCH	99		$300 p p \rightarrow p_f(K^+ K^-) p_s$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●								
148	$\begin{matrix} +40 \\ -30 \end{matrix}$				AMSLER	06	CBAR	$1.64 \bar{p} p \rightarrow K^+ K^- \pi^0$
188	$\pm 13$		80k	5	UMAN	06	E835	$5.2 \bar{p} p \rightarrow \eta \eta \pi^0$
250	$\pm 30$				VLADIMIRSK...	06	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
260	$\pm 50$				BINON	05	GAMS	$33 \pi^- p \rightarrow \eta \eta n$
102	$\pm 26$				TIKHOMIROV	03	SPEC	$40.0 \pi^- C \rightarrow K_S^0 K_S^0 K_L^0 X$
267	$\pm 44$		3651	6	NICHITIU	02	OBLX	$0 \bar{p} p \rightarrow K^+ K^- \pi^+ \pi^- \pi^0$
100	$\pm 25$				BARBERIS	99	OMEG	$450 p p \rightarrow p_s p_f K^+ K^-$
160	$\pm 30$				BARBERIS	99B	OMEG	$450 p p \rightarrow p_s p_f \pi^+ \pi^-$
30	$\pm 7$		57	7	BARKOV	98		$\pi^- p \rightarrow K_S^0 K_S^0 n$
103	$\pm 18$	$\begin{matrix} +30 \\ -11 \end{matrix}$		8	BAI	96C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
85	$\pm 24$	$\begin{matrix} +22 \\ -19 \end{matrix}$			BAI	96C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
56	$\pm 19$				BALOSHIN	95	SPEC	$40 \pi^- C \rightarrow K_S^0 K_S^0 X$
160	$\pm 40$			9	BUGG	95	MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
160	$\begin{matrix} +60 \\ -20 \end{matrix}$			8	BUGG	95	MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
264	$\pm 25$			10	ARMSTRONG	93C	E760	$\bar{p} p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
200	to 300				BREAKSTONE	93	SFM	$p p \rightarrow p p \pi^+ \pi^- \pi^+ \pi^-$
< 80	90% CL			11	ALDE	92D	GAM2	$38 \pi^- p \rightarrow \eta \eta N^*$
181	$\pm 30$			12	ARMSTRONG	89D	OMEG	$300 p p \rightarrow p p K^+ K^-$
104	$\pm 30$			12	ARMSTRONG	89D	OMEG	$300 p p \rightarrow p p K_S^0 K_S^0$
166.4	$\pm 33.2$			10	AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^+ K^-, K_S^0 K_S^0$
30	$\pm 20$			8	BOLONKIN	88	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
350	$\pm 150$				BOLONKIN	88	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
148	$\pm 17$			13	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
184	$\pm 6$			14	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
136	$\pm 28$			10	AUGUSTIN	87	DM2	$J/\psi \rightarrow \gamma \pi^+ \pi^-$
130	$\pm 20$			8	BALTRUSAIT..	87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$
122	$\begin{matrix} +74 \\ -15 \end{matrix}$			15	LONGACRE	86	RVUE	$22 \pi^- p \rightarrow n 2 K_S^0$
57	$\pm 38$			16	WILLIAMS	84	MPSF	$200 \pi^- N \rightarrow 2 K_S^0 X$
160	$\pm 80$				BLOOM	83	CBAL	$J/\psi \rightarrow \gamma 2\eta$
200	$\pm 100$				BURKE	82	MRK2	$J/\psi \rightarrow \gamma 2\rho$
220	$\begin{matrix} +100 \\ -70 \end{matrix}$			17,18	EDWARDS	82D	CBAL	$J/\psi \rightarrow \gamma 2\eta$
200	$\begin{matrix} +156 \\ -9 \end{matrix}$			19	ETKIN	82B	MPS	$23 \pi^- p \rightarrow n 2 K_S^0$

<sup>1</sup> 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  $f_2(1270)$ ,  $a_2^0(1320)$ , and  $f_2'(1525)$  mesons incoherently added to the  $f_0(1710)$  and non-resonant background.
- 4  $J^P = 0^+$ , supersedes ARMSTRONG 89D.
- 5 Systematic errors not estimated.
- 6 Decaying to  $f_0(1370)\pi\pi$ .
- 7 No  $J^{PC}$  determination.
- 8  $J^P = 2^+$ .
- 9 From a fit to the  $0^+$  partial wave.
- 10 No  $J^{PC}$  determination.
- 11 ALDE 92D combines all the GAMS-2000 data.
- 12  $J^P = 2^+$ , ( $0^+$  excluded).
- 13 From an analysis ignoring interference with  $f_2'(1525)$ .
- 14 From an analysis including interference with  $f_2'(1525)$ .
- 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.
- 16 No  $J^{PC}$  determination.
- 17  $J^P = 2^+$  preferred.
- 18 From fit neglecting nearby  $f_2'(1525)$ . Replaced by BLOOM 83.
- 19 From an amplitude analysis of the  $K_S^0 K_S^0$  system, superseded by LONGACRE 86.



**$f_0(1710)$  DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $K\bar{K}$	seen
$\Gamma_2$ $\eta\eta$	seen
$\Gamma_3$ $\eta\eta'$	not seen
$\Gamma_4$ $\pi\pi$	seen
$\Gamma_5$ $\gamma\gamma$	seen
$\Gamma_6$ $\omega\omega$	seen

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

$\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_1\Gamma_5/\Gamma$
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	
$12^{+3}_{-2} + 227_{-8}$		UEHARA	13	BELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$

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

<480	95	ALBRECHT	90G	ARG	$\gamma\gamma \rightarrow K^+ K^-$
<110	95	<sup>1</sup> BEHREND	89C	CELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$
<280	95	<sup>1</sup> ALTHOFF	85B	TASS	$\gamma\gamma \rightarrow K\bar{K}\pi$

<sup>1</sup> Assuming helicity 2.

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_4\Gamma_5/\Gamma$
VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT	
<0.82	95	<sup>1</sup> BARATE	00E	ALEP	$\gamma\gamma \rightarrow \pi^+\pi^-$

<sup>1</sup> Assuming spin 0.

 **$f_0(1710)$  BRANCHING RATIOS**

$\Gamma(K\bar{K})/\Gamma_{\text{total}}$					$\Gamma_1/\Gamma$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
seen	1004	<sup>1</sup> DOBBS	15		$J/\psi \rightarrow \gamma K^+ K^-$
seen	349	<sup>1</sup> DOBBS	15		$\psi(2S) \rightarrow \gamma K^+ K^-$
$0.36 \pm 0.12$		ALBALADEJO	08	RVUE	
$0.38^{+0.09}_{-0.19}$		<sup>2</sup> LONGACRE	86	MPS	$22 \pi^- p \rightarrow n 2 K_S^0$

<sup>1</sup> Using CLEO-c data but not authored by the CLEO Collaboration.

<sup>2</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$					$\Gamma_2/\Gamma$
VALUE		DOCUMENT ID	TECN		
$0.22 \pm 0.12$		ALBALADEJO	08	RVUE	
$0.18^{+0.03}_{-0.13}$		<sup>1</sup> LONGACRE	86	RVUE	

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

### $\Gamma(\eta\eta)/\Gamma(K\bar{K})$

$\Gamma_2/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<b>0.48±0.15</b>		BARBERIS	00E	450 $p\bar{p} \rightarrow p_f\eta\eta p_S$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.46^{+0.70}_{-0.38}$		<sup>1</sup> ANISOVICH	02D	SPEC Combined fit
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<0.02	90	<sup>2</sup> PROKOSHKIN	91	GA24 300 $\pi^- p \rightarrow \pi^- p\eta\eta$
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<sup>1</sup> 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.

<sup>2</sup> Combining results of GAM4 with those of ARMSTRONG 89D.

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

$\Gamma_4/\Gamma$

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

seen	381	<sup>1</sup> DOBBS	15	$J/\psi \rightarrow \gamma\pi^+\pi^-$
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seen	237	<sup>1</sup> DOBBS	15	$\psi(2S) \rightarrow \gamma\pi^+\pi^-$
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not seen		AMSLER	02	CBAR 0.9 $\bar{p}p \rightarrow \pi^0\eta\eta, \pi^0\pi^0\pi^0$
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$0.039^{+0.002}_{-0.024}$		<sup>2</sup> LONGACRE	86	RVUE
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<sup>1</sup> Using CLEO-c data but not authored by the CLEO Collaboration.

<sup>2</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2. Fit with constrained inelasticity.

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

$\Gamma_4/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<b>0.23±0.05 OUR AVERAGE</b>		Error includes scale factor of 1.2.		
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$0.64 \pm 0.27 \pm 0.18$		LEES	18A	BABR $\Upsilon(1S) \rightarrow \gamma\pi^+\pi^-, \gamma K^+K^-$
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$0.41^{+0.11}_{-0.17}$		ABLIKIM	06V	BES2 $e^+e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
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$0.2 \pm 0.024 \pm 0.036$		BARBERIS	99D	OMEG 450 $p\bar{p} \rightarrow K^+K^-, \pi^+\pi^-$
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$0.39 \pm 0.14$		ARMSTRONG	91	OMEG 300 $p\bar{p} \rightarrow p\bar{p}\pi\pi, p\bar{p}K\bar{K}$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.32 \pm 0.14$		ALBALADEJO	08	RVUE
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< 0.11	95	<sup>1</sup> ABLIKIM	04E	BES2 $J/\psi \rightarrow \omega K^+K^-$
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$5.8^{+9.1}_{-5.5}$		<sup>2</sup> ANISOVICH	02D	SPEC Combined fit
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<sup>1</sup> Using data from ABLIKIM 04A.

<sup>2</sup> 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.

### $\Gamma(\eta\eta')/\Gamma(\pi\pi)$

$\Gamma_3/\Gamma_4$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<b>&lt;2.87 × 10<sup>-3</sup></b>	90	<sup>1</sup> ABLIKIM	22AS	BES3 $J/\psi(1S) \rightarrow \gamma\eta\eta'$
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<sup>1</sup> From a Breit-Wigner fit involving 9 resonances and a resonating exotic  $\eta_1(1855) \rightarrow \eta\eta'$  P-wave.

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

$\Gamma_6/\Gamma$

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