

**$f_0(1710)$**

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

See our mini-review in the 2004 edition of this *Review*, *Physics Letters B* **592** 1 (2004). See also the mini-review on scalar mesons under  $f_0(500)$  (see the index for the page number).

**$f_0(1710)$  MASS**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>1723^{+6}_{-5}</math></b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.6. See the ideogram below.		
$1759 \pm 6$	$^{+14}_{-25}$ 5.5k	1 ABLIKIM	13N BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\eta\eta$
$1750^{+6}_{-7}$	$^{+29}_{-18}$	UEHARA	13 BELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$
$1701 \pm 5$	$^{+9}_{-2}$ 4k	2 CHEKANOV	08 ZEUS	$ep \rightarrow K_S^0 K_S^0 X$
$1765^{+4}_{-3}$	$\pm 13$	ABLIKIM	06V BES2	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
$1760 \pm 15$	$^{+15}_{-10}$	3 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^- K^+ K^-$
$1738 \pm 30$		ABLIKIM	04E BES2	$J/\psi \rightarrow \omega K^+ K^-$
$1740 \pm 4$	$^{+10}_{-25}$	4 BAI	03G BES	$J/\psi \rightarrow \gamma K\bar{K}$
$1740^{+30}_{-25}$		4 BAI	00A BES	$J/\psi \rightarrow \gamma(\pi^+\pi^-\pi^+\pi^-)$
$1698 \pm 18$		5 BARBERIS	00E	$450 pp \rightarrow p_f \eta\eta p_S$
$1710 \pm 12$	$\pm 11$	6 BARBERIS	99D OMEG	$450 pp \rightarrow K^+ K^-, \pi^+ \pi^-$
$1710 \pm 25$		7 FRENCH	99	$300 pp \rightarrow p_f (K^+ K^-) p_S$
$1707 \pm 10$		8 AUGUSTIN	88 DM2	$J/\psi \rightarrow \gamma K^+ K^-, K_S^0 K_S^0$
$1698 \pm 15$		8 AUGUSTIN	87 DM2	$J/\psi \rightarrow \gamma\pi^+\pi^-$
$1720 \pm 10$	$\pm 10$	9 BALTRUSAIT..87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$
$1742 \pm 15$		8 WILLIAMS	84 MPSF	$200 \pi^- N \rightarrow 2K_S^0 X$
$1670 \pm 50$		BLOOM	83 CBAL	$J/\psi \rightarrow \gamma 2\eta$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$1750 \pm 13$		AMSLER	06 CBAR	$1.64 \bar{p}p \rightarrow K^+ K^- \pi^0$
$1747 \pm 5$	80k $^{10,11}$	UMAN	06 E835	$5.2 \bar{p}p \rightarrow \eta\eta\pi^0$
$1776 \pm 15$		VLADIMIRSK..06	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
$1790^{+40}_{-30}$		3 ABLIKIM	05 BES2	$J/\psi \rightarrow \phi\pi^+\pi^-$
$1670 \pm 20$		10 BINON	05 GAMS	$33 \pi^- p \rightarrow \eta\eta n$
$1726 \pm 7$	74	11 CHEKANOV	04 ZEUS	$ep \rightarrow K_S^0 K_S^0 X$
$1732 \pm 15$		12 ANISOVICH	03 RVUE	
$1682 \pm 16$		TIKHOMIROV	03 SPEC	$40.0 \pi^- C \rightarrow K_S^0 K_S^0 K_L^0 X$
$1670 \pm 26$	3651	4,13 NICHITIU	02 OBLX	
$1770 \pm 12$	$^{14,15}$	ANISOVICH	99B SPEC	$0.6-1.2 p\bar{p} \rightarrow \eta\eta\pi^0$
$1730 \pm 15$		4 BARBERIS	99 OMEG	$450 pp \rightarrow p_S p_f K^+ K^-$
$1750 \pm 20$		4 BARBERIS	99B OMEG	$450 pp \rightarrow p_S p_f \pi^+ \pi^-$
$1750 \pm 30$		16 ANISOVICH	98B RVUE	Compilation
$1720 \pm 39$		BAI	98H BES	$J/\psi \rightarrow \gamma\pi^0\pi^0$

1775 ± 1.5	57	17 BARKOV	98	$\pi^- p \rightarrow K_S^0 K_S^0 n$
1690 ± 11		18 ABREU	96C	DLPH $Z^0 \rightarrow K^+ K^- + X$
1696 ± 5	$\begin{smallmatrix} +9 \\ -34 \end{smallmatrix}$	9 BAI	96C	BES $J/\psi \rightarrow \gamma K^+ K^-$
1781 ± 8	$\begin{smallmatrix} +10 \\ -31 \end{smallmatrix}$	4 BAI	96C	BES $J/\psi \rightarrow \gamma K^+ K^-$
1768 ± 14		BALOSHIN	95	SPEC 40 $\pi^- p \rightarrow K_S^0 K_S^0 X$
1750 ± 15		19 BUGG	95	MRK3 $J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
1620 ± 16		9 BUGG	95	MRK3 $J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
1748 ± 10		8 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		20 ALDE	92D	GAM2 38 $\pi^- p \rightarrow \eta \eta n$
1713 ± 10		21 ARMSTRONG	89D	OMEG 300 $pp \rightarrow pp K^+ K^-$
1706 ± 10		21 ARMSTRONG	89D	OMEG 300 $pp \rightarrow pp K_S^0 K_S^0$
1700 ± 15		9 BOLONKIN	88	SPEC 40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
1720 ± 60		4 BOLONKIN	88	SPEC 40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
1638 ± 10		22 FALVARD	88	DM2 $J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
1690 ± 4		23 FALVARD	88	DM2 $J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
1755 ± 8		24 ALDE	86C	GAM2 38 $\pi^- p \rightarrow n 2\eta$
1730 $\begin{smallmatrix} +2 \\ -10 \end{smallmatrix}$		25 LONGACRE	86	RVUE 22 $\pi^- p \rightarrow n 2K_S^0$
1650 ± 50		BURKE	82	MRK2 $J/\psi \rightarrow \gamma 2\rho$
1640 ± 50		26,27 EDWARDS	82D	CBAL $J/\psi \rightarrow \gamma 2\eta$
1730 ± 10 ± 20		28 ETKIN	82C	MPS 23 $\pi^- p \rightarrow n 2K_S^0$

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

<sup>2</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>3</sup> This state may be different from  $f_0(1710)$ , see CLOSE 05.

<sup>4</sup>  $J^P = 0^+$ .

<sup>5</sup> T-matrix pole.

<sup>6</sup> Supersedes BARBERIS 99 and BARBERIS 99B.

<sup>7</sup>  $J^P = 0^+$ , superseded by ARMSTRONG 89D.

<sup>8</sup> No  $J^{PC}$  determination.

<sup>9</sup>  $J^P = 2^+$ .

<sup>10</sup> Breit-Wigner mass.

<sup>11</sup> Systematic errors not estimated.

<sup>12</sup> K-matrix pole, assuming  $J^P = 0^+$ , 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.

<sup>13</sup> Decaying to  $f_0(1370) \pi \pi$ .

<sup>14</sup>  $J^P = 0^+$ .

<sup>15</sup> Not seen by AMSLER 02.

<sup>16</sup> T-matrix pole, assuming  $J^P = 0^+$

<sup>17</sup> No  $J^{PC}$  determination.

<sup>18</sup> No  $J^{PC}$  determination, width not determined.

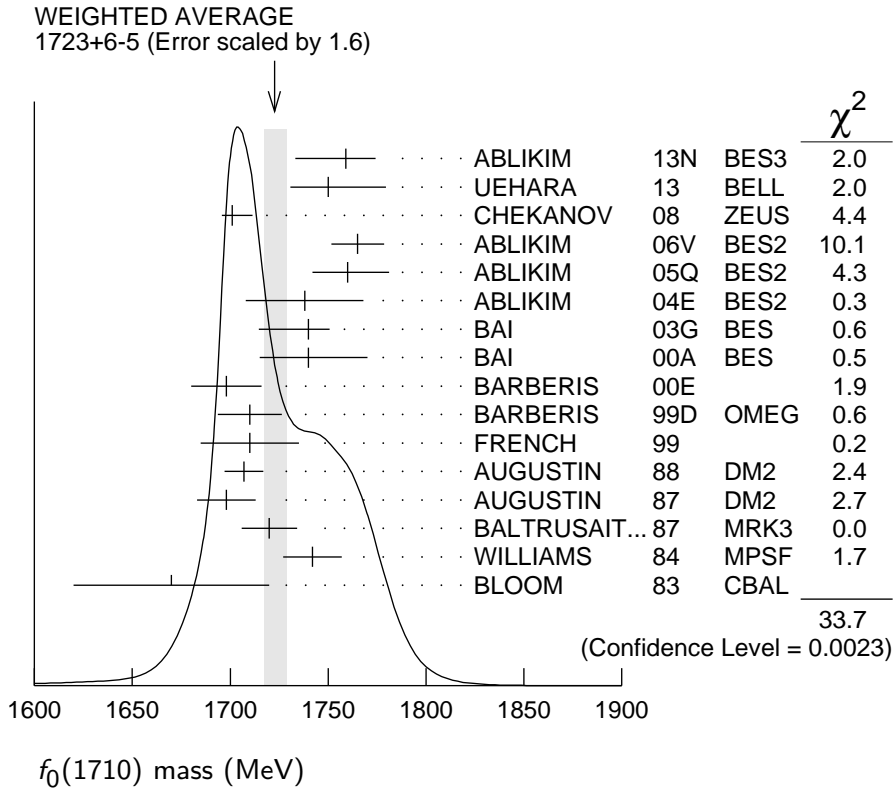
<sup>19</sup> From a fit to the  $0^+$  partial wave.

<sup>20</sup> ALDE 92D combines all the GAMS-2000 data.

<sup>21</sup>  $J^P = 2^+$ , superseded by FRENCH 99.

<sup>22</sup> From an analysis ignoring interference with  $f_2'(1525)$ .

- 23 From an analysis including interference with  $f'_2(1525)$ .
- 24 Superseded by ALDE 92D.
- 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  $J^P = 2^+$  preferred.
- 27 From fit neglecting nearby  $f'_2(1525)$ . Replaced by BLOOM 83.
- 28 Superseded by LONGACRE 86.



### $f_0(1710)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>139 ± 8</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.1.		
172 ± 10	<sup>+32</sup> / <sub>-16</sub> 5.5k	29 ABLIKIM	13N BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\eta\eta$
139 + 11 / - 12	<sup>+96</sup> / <sub>-50</sub>	UEHARA	13 BELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$
100 ± 24	<sup>+7</sup> / <sub>-22</sub> 4k	30 CHEKANOV	08 ZEUS	$ep \rightarrow K_S^0 K_S^0 X$
145 ± 8	±69	ABLIKIM	06V BES2	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
125 ± 25	<sup>+10</sup> / <sub>-15</sub>	31 ABLIKIM	05Q BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^- K^+ K^-$
125 ± 20		ABLIKIM	04E BES2	$J/\psi \rightarrow \omega K^+ K^-$
166 + 5 / - 8	<sup>+15</sup> / <sub>-10</sub>	32 BAI	03G BES	$J/\psi \rightarrow \gamma K \bar{K}$
120 + 50 / - 40		32 BAI	00A BES	$J/\psi \rightarrow \gamma(\pi^+\pi^-\pi^+\pi^-)$

120 ± 26		33 BARBERIS	00E	450 $pp \rightarrow p_f \eta \eta p_s$
126 ± 16 ± 18		34 BARBERIS	99D OMEG	450 $pp \rightarrow K^+ K^-, \pi^+ \pi^-$
105 ± 34		35 FRENCH	99	300 $pp \rightarrow p_f (K^+ K^-) p_s$
166.4 ± 33.2		36 AUGUSTIN	88 DM2	$J/\psi \rightarrow \gamma K^+ K^-, K_S^0 K_S^0$
136 ± 28		36 AUGUSTIN	87 DM2	$J/\psi \rightarrow \gamma \pi^+ \pi^-$
130 ± 20		37 BALTRUSAIT..	87 MRK3	$J/\psi \rightarrow \gamma K^+ K^-$
57 ± 38		38 WILLIAMS	84 MPSF	200 $\pi^- N \rightarrow 2K_S^0 X$
160 ± 80		BLOOM	83 CBAL	$J/\psi \rightarrow \gamma 2\eta$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
148 + 40 - 30		AMSLER	06 CBAR	1.64 $\bar{p}p \rightarrow K^+ K^- \pi^0$
188 ± 13	80k 31,39	UMAN	06 E835	5.2 $\bar{p}p \rightarrow \eta \eta \pi^0$
250 ± 30		VLADIMIRSK..	06 SPEC	40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
270 + 60 - 30		40 ABLIKIM	05 BES2	$J/\psi \rightarrow \phi \pi^+ \pi^-$
260 ± 50		31 BINON	05 GAMS	33 $\pi^- p \rightarrow \eta \eta n$
38 + 20 - 14	74	39 CHEKANOV	04 ZEUS	$e p \rightarrow K_S^0 K_S^0 X$
144 ± 30	41,42	ANISOVICH	03 RVUE	
320 + 50 - 20	42,43	ANISOVICH	03 RVUE	
102 ± 26		TIKHOMIROV	03 SPEC	40.0 $\pi^- C \rightarrow K_S^0 K_S^0 K_L^0 X$
267 ± 44	3651 32,44	NICHITIU	02 OBLX	
220 ± 40	45,46	ANISOVICH	99B SPEC	0.6–1.2 $p\bar{p} \rightarrow \eta \eta \pi^0$
100 ± 25	32	BARBERIS	99 OMEG	450 $pp \rightarrow p_s p_f K^+ K^-$
160 ± 30	32	BARBERIS	99B OMEG	450 $pp \rightarrow p_s p_f \pi^+ \pi^-$
250 ± 140	47	ANISOVICH	98B RVUE	Compilation
30 ± 7	57	48 BARKOV	98	$\pi^- p \rightarrow K_S^0 K_S^0 n$
103 ± 18 +30 -11		37 BAI	96C BES	$J/\psi \rightarrow \gamma K^+ K^-$
85 ± 24 +22 -19		32 BAI	96C BES	$J/\psi \rightarrow \gamma K^+ K^-$
56 ± 19		BALOSHIN	95 SPEC	40 $\pi^- C \rightarrow K_S^0 K_S^0 X$
160 ± 40		49 BUGG	95 MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
160 + 60 - 20		37 BUGG	95 MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
264 ± 25		36 ARMSTRONG	93C E760	$\bar{p}p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
200 to 300		BREAKSTONE	93 SFM	$pp \rightarrow pp \pi^+ \pi^- \pi^+ \pi^-$
< 80 90% CL		50 ALDE	92D GAM2	38 $\pi^- p \rightarrow \eta \eta N^*$
181 ± 30		51 ARMSTRONG	89D OMEG	300 $pp \rightarrow pp K^+ K^-$
104 ± 30		51 ARMSTRONG	89D OMEG	300 $pp \rightarrow pp K_S^0 K_S^0$
30 ± 20		37 BOLONKIN	88 SPEC	40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
350 ± 150		32 BOLONKIN	88 SPEC	40 $\pi^- p \rightarrow K_S^0 K_S^0 n$
148 ± 17		52 FALVARD	88 DM2	$J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
184 ± 6		53 FALVARD	88 DM2	$J/\psi \rightarrow \phi K^+ K^-, K_S^0 K_S^0$
122 + 74 - 15		54 LONGACRE	86 RVUE	22 $\pi^- p \rightarrow n 2K_S^0$
200 ± 100		BURKE	82 MRK2	$J/\psi \rightarrow \gamma 2\rho$

- 220  $\begin{matrix} +100 \\ -70 \end{matrix}$  55,56 EDWARDS 82D CBAL  $J/\psi \rightarrow \gamma 2\eta$
- 200  $\begin{matrix} +156 \\ -9 \end{matrix}$  57 ETKIN 82B MPS 23  $\pi^- p \rightarrow n 2K_S^0$
- 29 From partial wave analysis including all possible combinations of  $0^{++}$ ,  $2^{++}$ , and  $4^{++}$  resonances.
- 30 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.
- 31 Breit-Wigner width.
- 32  $J^P = 0^+$ .
- 33 T-matrix pole.
- 34 Supersedes BARBERIS 99 and BARBERIS 99B.
- 35  $J^P = 0^+$ , supersedes by ARMSTRONG 89D.
- 36 No  $J^{PC}$  determination.
- 37  $J^P = 2^+$ .
- 38 No  $J^{PC}$  determination.
- 39 Systematic errors not estimated.
- 40 This state may be different from  $f_0(1710)$ , see CLOSE 05.
- 41 (Solution I)
- 42 K-matrix pole, assuming  $J^P = 0^+$ , 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.
- 43 (Solution I)
- 44 Decaying to  $f_0(1370) \pi \pi$ .
- 45  $J^P = 0^+$ .
- 46 Not seen by AMSLER 02.
- 47 T-matrix pole, assuming  $J^P = 0^+$
- 48 No  $J^{PC}$  determination.
- 49 From a fit to the  $0^+$  partial wave.
- 50 ALDE 92D combines all the GAMS-2000 data.
- 51  $J^P = 2^+$ , ( $0^+$  excluded).
- 52 From an analysis ignoring interference with  $f_2'(1525)$ .
- 53 From an analysis including interference with  $f_2'(1525)$ .
- 54 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.
- 55  $J^P = 2^+$  preferred.
- 56 From fit neglecting nearby  $f_2'(1525)$ . Replaced by BLOOM 83.
- 57 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
$\Gamma_3$ $\pi \pi$	seen
$\Gamma_4$ $\gamma \gamma$	
$\Gamma_5$ $\omega \omega$	seen

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

#### $\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_1\Gamma_4/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
$12^{+3+227}_{-2-8}$		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>58</sup> BEHREND	89C	CELL $\gamma\gamma \rightarrow K_S^0 K_S^0$
<280	95	<sup>58</sup> ALTHOFF	85B	TASS $\gamma\gamma \rightarrow K\bar{K}\pi$

<sup>58</sup> Assuming helicity 2.

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

VALUE (keV)	CL%	DOCUMENT ID	TECN	COMMENT
<0.82	95	<sup>59</sup> BARATE	00E	ALEP $\gamma\gamma \rightarrow \pi^+ \pi^-$

<sup>59</sup> Assuming spin 0.

### $f_0(1710)$ BRANCHING RATIOS

#### $\Gamma(K\bar{K})/\Gamma_{\text{total}}$ $\Gamma_1/\Gamma$

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

$0.36 \pm 0.12$	ALBALADEJO 08	RVUE	
$0.38^{+0.09}_{-0.19}$	<sup>60,61</sup> LONGACRE 86	MPS	$22 \pi^- p \rightarrow n 2K_S^0$

#### $\Gamma(\eta\eta)/\Gamma_{\text{total}}$ $\Gamma_2/\Gamma$

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

$0.22 \pm 0.12$	ALBALADEJO 08	RVUE	
$0.18^{+0.03}_{-0.13}$	<sup>60,61</sup> LONGACRE 86	RVUE	

#### $\Gamma(\pi\pi)/\Gamma_{\text{total}}$ $\Gamma_3/\Gamma$

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

not seen	AMSLER 02	CBAR	$0.9 \bar{p} p \rightarrow \pi^0 \eta \eta, \pi^0 \pi^0 \pi^0$
$0.039^{+0.002}_{-0.024}$	<sup>60,61</sup> LONGACRE 86	RVUE	

#### $\Gamma(\pi\pi)/\Gamma(K\bar{K})$ $\Gamma_3/\Gamma_1$

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

$0.32 \pm 0.14$		ALBALADEJO 08	RVUE	
< 0.11	95	<sup>62</sup> ABLIKIM 04E	BES2	$J/\psi \rightarrow \omega K^+ K^-$
$5.8^{+9.1}_{-5.5}$		<sup>63</sup> ANISOVICH 02D	SPEC	Combined fit
$0.2 \pm 0.024 \pm 0.036$		BARBERIS 99D	OMEG 450	$pp \rightarrow K^+ K^-, \pi^+ \pi^-$
$0.39 \pm 0.14$		ARMSTRONG 91	OMEG 300	$pp \rightarrow pp\pi\pi, ppK\bar{K}$

$\Gamma(\eta\eta)/\Gamma(K\bar{K})$				$\Gamma_2/\Gamma_1$
VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>0.48±0.15</b>		BARBERIS	00E	450 $p p \rightarrow p_f \eta \eta p_S$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$0.46^{+0.70}_{-0.38}$		<sup>63</sup> ANISOVICH	02D SPEC	Combined fit
<0.02	90	<sup>64</sup> PROKOSHKIN	91 GA24	300 $\pi^- p \rightarrow \pi^- p \eta \eta$

$\Gamma(\omega\omega)/\Gamma_{total}$				$\Gamma_5/\Gamma$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>seen</b>	180	ABLIKIM	06H BES	$J/\psi \rightarrow \gamma\omega\omega$
<sup>60</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles, but assuming spin 2.				
<sup>61</sup> Fit with constrained inelasticity.				
<sup>62</sup> Using data from ABLIKIM 04A.				
<sup>63</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>64</sup> Combining results of GAM4 with those of ARMSTRONG 89D.				

### $f_0(1710)$ REFERENCES

ABLIKIM	13N	PR D87 092009	Ablikim M. <i>et al.</i>	(BES III Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara <i>et al.</i>	(BELLE Collab.)
ALBALADEJO	08	PRL 101 252002	M. Albaladejo, J.A. Oller	
CHEKANOV	08	PRL 101 112003	S. Chekanov <i>et al.</i>	(ZEUS Collab.)
ABLIKIM	06H	PR D73 112007	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	06V	PL B642 441	M. Ablikim <i>et al.</i>	(BES Collab.)
AMSLER	06	PL B639 165	C. Amsler <i>et al.</i>	(CBAR Collab.)
UMAN	06	PR D73 052009	I. Uman <i>et al.</i>	(FNAL E835)
VLADIMIRSK...	06	PAN 69 493	V.V. Vladimirovsky <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.)
BINON	05	PAN 68 960	F. Binon <i>et al.</i>	
		Translated from YAF 68 998.		
CLOSE	05	PR D71 094022	F.E. Close, Q. Zhao	
ABLIKIM	04A	PL B598 149	M. Ablikim <i>et al.</i>	(BES Collab.)
ABLIKIM	04E	PL B603 138	M. Ablikim <i>et al.</i>	(BES Collab.)
CHEKANOV	04	PL B578 33	S. Chekanov <i>et al.</i>	(ZEUS Collab.)
PDG	04	PL B592 1	S. Eidelman <i>et al.</i>	(PDG Collab.)
ANISOVICH	03	EPJ A16 229	V.V. Anisovich <i>et al.</i>	
BAI	03G	PR D68 052003	J.Z. Bai <i>et al.</i>	(BES Collab.)
TIKHOMIROV	03	PAN 66 828	G.D. Tikhomirov <i>et al.</i>	
		Translated from YAF 66 860.		
AMSLER	02	EPJ C23 29	C. Amsler <i>et al.</i>	
ANISOVICH	02D	PAN 65 1545	V.V. Anisovich <i>et al.</i>	
		Translated from YAF 65 1583.		
NICHITIU	02	PL B545 261	F. Nichitiu <i>et al.</i>	(OBELIX Collab.)
BAI	00A	PL B472 207	J.Z. Bai <i>et al.</i>	(BES Collab.)
BARATE	00E	PL B472 189	R. Barate <i>et al.</i>	(ALEPH Collab.)
BARBERIS	00E	PL B479 59	D. Barberis <i>et al.</i>	(WA 102 Collab.)
ANISOVICH	99B	PL B449 154	A.V. Anisovich <i>et al.</i>	
BARBERIS	99	PL B453 305	D. Barberis <i>et al.</i>	(Omega Expt.)
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.)
FRENCH	99	PL B460 213	B. French <i>et al.</i>	(WA76 Collab.)
ANISOVICH	98B	SPU 41 419	V.V. Anisovich <i>et al.</i>	
		Translated from UFN 168 481.		
BAI	98H	PRL 81 1179	J.Z. Bai <i>et al.</i>	(BES Collab.)
BARKOV	98	JETPL 68 764	B.P. Barkov <i>et al.</i>	
ABREU	96C	PL B379 309	P. Abreu <i>et al.</i>	(DELPHI Collab.)
BAI	96C	PRL 77 3959	J.Z. Bai <i>et al.</i>	(BES Collab.)
BALOSHIN	95	PAN 58 46	O.N. Baloshin <i>et al.</i>	(ITEP)
		Translated from YAF 58 50.		

BUGG	95	PL B353 378	D.V. Bugg <i>et al.</i>	(LOQM, PNPI, WASH)
ARMSTRONG	93C	PL B307 394	T.A. Armstrong <i>et al.</i>	(FNAL, FERR, GENO+)
BREAKSTONE	93	ZPHY C58 251	A.M. Breakstone <i>et al.</i>	(IOWA, CERN, DORT+)
ALDE	92D	PL B284 457	D.M. Alde <i>et al.</i>	(GAM2 Collab.)
Also		SJNP 54 451	D.M. Alde <i>et al.</i>	(GAM2 Collab.)
		Translated from YAF 54 745.		
ARMSTRONG	91	ZPHY C51 351	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+)
PROKOSHKIN	91	SPD 36 155	Y.D. Prokoshkin	(GAM2, GAM4 Collab.)
		Translated from DANS 316 900.		
ALBRECHT	90G	ZPHY C48 183	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ARMSTRONG	89D	PL B227 186	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)
BEHREND	89C	ZPHY C43 91	H.J. Behrend <i>et al.</i>	(CELLO Collab.)
AUGUSTIN	88	PRL 60 2238	J.E. Augustin <i>et al.</i>	(DM2 Collab.)
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+)
AUGUSTIN	87	ZPHY C36 369	J.E. Augustin <i>et al.</i>	(LALO, CLER, FRAS+)
BALTRUSAIT...	87	PR D35 2077	R.M. Baltrusaitis <i>et al.</i>	(Mark III Collab.)
ALDE	86C	PL B182 105	D.M. Alde <i>et al.</i>	(SERP, BELG, LANL, LAPP)
LONGACRE	86	PL B177 223	R.S. Longacre <i>et al.</i>	(BNL, BRAN, CUNY+)
ALTHOFF	85B	ZPHY C29 189	M. Althoff <i>et al.</i>	(TASSO Collab.)
WILLIAMS	84	PR D30 877	E.G.H. Williams <i>et al.</i>	(VAND, NDAM, TUFTS+)
BLOOM	83	ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)
BURKE	82	PRL 49 632	D.L. Burke <i>et al.</i>	(LBL, SLAC)
EDWARDS	82D	PRL 48 458	C. Edwards <i>et al.</i>	(CIT, HARV, PRIN+)
ETKIN	82B	PR D25 1786	A. Etkin <i>et al.</i>	(BNL, CUNY, TUFTS, VAND)
ETKIN	82C	PR D25 2446	A. Etkin <i>et al.</i>	(BNL, CUNY, TUFTS, VAND)

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