# $f_0(1710)$

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

See our mini-review in the 2004 edition of this *Review*, Physics Letters **B592** 1 (2004). See also the mini-review on scalar mesons under $f_0(600)$ (see the index for the page number).

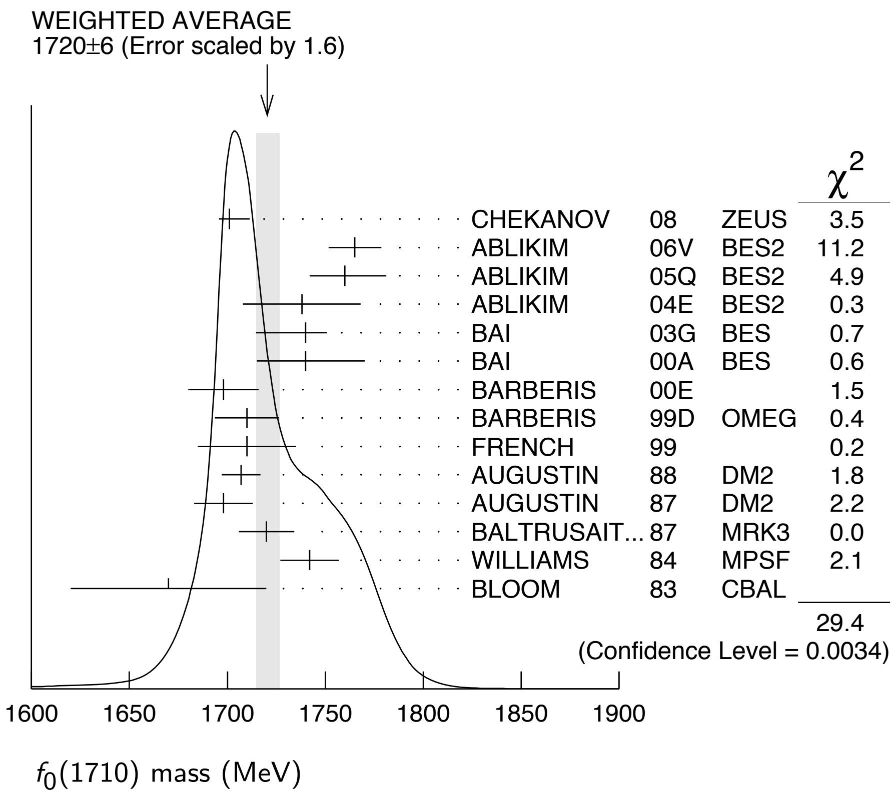
## $f_0(1710)$ MASS

| VALUE (MeV) | | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|---|
| **1720± 6** | **OUR AVERAGE** | | Error includes scale factor of 1.6. See the ideogram below. | | | |
| 1701± 5 | $^{+9}_{-2}$ | 4k | [1] CHEKANOV | 08 | ZEUS | $e p \to K^0_S K^0_S X$ |
| $1765^{+4}_{-3}$ | ±13 | | ABLIKIM | 06V | BES2 | $e^+ e^- \to J/\psi \to \gamma \pi^+ \pi^-$ |
| 1760±15 | $^{+15}_{-10}$ | | [2] ABLIKIM | 05Q | BES2 | $\psi(2S) \to \gamma \pi^+ \pi^- K^+ K^-$ |
| 1738±30 | | | ABLIKIM | 04E | BES2 | $J/\psi \to \omega K^+ K^-$ |
| 1740± 4 | $^{+10}_{-25}$ | | [3] BAI | 03G | BES | $J/\psi \to \gamma K \overline{K}$ |
| $1740^{+30}_{-25}$ | | | [3] BAI | 00A | BES | $J/\psi \to \gamma(\pi^+ \pi^- \pi^+ \pi^-)$ |
| 1698±18 | | | [4] BARBERIS | 00E | | 450 $p p \to p_f \eta \eta p_s$ |
| 1710±12 | ±11 | | [5] BARBERIS | 99D | OMEG | 450 $p p \to K^+ K^-, \pi^+ \pi^-$ |
| 1710±25 | | | [6] FRENCH | 99 | | 300 $p p \to p_f (K^+ K^-) p_s$ |
| 1707±10 | | | [7] AUGUSTIN | 88 | DM2 | $J/\psi \to \gamma K^+ K^-, K^0_S K^0_S$ |
| 1698±15 | | | [7] AUGUSTIN | 87 | DM2 | $J/\psi \to \gamma \pi^+ \pi^-$ |
| 1720±10 | ±10 | | [8] BALTRUSAIT... | 87 | MRK3 | $J/\psi \to \gamma K^+ K^-$ |
| 1742±15 | | | [7] WILLIAMS | 84 | MPSF | 200 $\pi^- N \to 2 K^0_S X$ |
| 1670±50 | | | BLOOM | 83 | CBAL | $J/\psi \to \gamma 2\eta$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | | |
| 1750±13 | | | AMSLER | 06 | CBAR | 1.64 $\overline{p} p \to K^+ K^- \pi^0$ |
| 1747± 5 | | 80k | [9,10] UMAN | 06 | E835 | 5.2 $\overline{p} p \to \eta \eta \pi^0$ |
| 1776±15 | | | VLADIMIRSK... | 06 | SPEC | 40 $\pi^- p \to K^0_S K^0_S n$ |
| $1790^{+40}_{-30}$ | | | [2] ABLIKIM | 05 | BES2 | $J/\psi \to \phi \pi^+ \pi^-$ |
| 1670±20 | | | [9] BINON | 05 | GAMS | 33 $\pi^- p \to \eta \eta n$ |
| 1726± 7 | | 74 | [10] CHEKANOV | 04 | ZEUS | $e p \to K^0_S K^0_S X$ |
| 1732+15 | | | [11] 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 | | 3651 | [3,12] NICHITIU | 02 | OBLX | |
| 1770±12 | | | [13,14] ANISOVICH | 99B | SPEC | 0.6–1.2 $p \overline{p} \to \eta \eta \pi^0$ |
| 1730±15 | | | [3] BARBERIS | 99 | OMEG | 450 $p p \to p_s p_f K^+ K^-$ |
| 1750±20 | | | [3] BARBERIS | 99B | OMEG | 450 $p p \to p_s p_f \pi^+ \pi^-$ |
| 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± 5 | $^{+9}_{-34}$ | | [8] BAI | 96C | BES | $J/\psi \to \gamma K^+ K^-$ |

| | | | | | | |
|---|---|---|---|---|---|---|
| $1781 \pm 8$ | ${}^{+10}_{-31}$ | [3] BAI | 96C | BES | $J/\psi \to \gamma K^+ K^-$ |
| $1768 \pm 14$ | | BALOSHIN | 95 | SPEC | $40\ \pi^- \mathrm{C} \to K^0_S K^0_S \mathrm{X}$ |
| $1750 \pm 15$ | | [18] BUGG | 95 | MRK3 | $J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$ |
| $1620 \pm 16$ | | [8] BUGG | 95 | MRK3 | $J/\psi \to \gamma \pi^+ \pi^- \pi^+ \pi^-$ |
| $1748 \pm 10$ | | [7] ARMSTRONG | 93C | E760 | $\overline{p} p \to \pi^0 \eta \eta \to 6\gamma$ |
| $\sim 1750$ | | BREAKSTONE | 93 | SFM | $p p \to p p \pi^+ \pi^- \pi^+ \pi^-$ |
| $1744 \pm 15$ | | [19] ALDE | 92D | GAM2 | $38\ \pi^- p \to \eta \eta n$ |
| $1713 \pm 10$ | | [20] ARMSTRONG | 89D | OMEG | $300\ p p \to p p K^+ K^-$ |
| $1706 \pm 10$ | | [20] ARMSTRONG | 89D | OMEG | $300\ p p \to p p K^0_S K^0_S$ |
| $1700 \pm 15$ | | [8] BOLONKIN | 88 | SPEC | $40\ \pi^- p \to K^0_S K^0_S n$ |
| $1720 \pm 60$ | | [3] BOLONKIN | 88 | SPEC | $40\ \pi^- p \to K^0_S K^0_S n$ |
| $1638 \pm 10$ | | [21] FALVARD | 88 | DM2 | $J/\psi \to \phi K^+ K^-, K^0_S K^0_S$ |
| $1690 \pm 4$ | | [22] FALVARD | 88 | DM2 | $J/\psi \to \phi K^+ K^-, K^0_S K^0_S$ |
| $1755 \pm 8$ | | [23] ALDE | 86C | GAM2 | $38\ \pi^- p \to n 2\eta$ |
| $1730 {}^{+\ 2}_{-10}$ | | [24] LONGACRE | 86 | RVUE | $22\ \pi^- p \to n 2K^0_S$ |
| $1650 \pm 50$ | | BURKE | 82 | MRK2 | $J/\psi \to \gamma 2\rho$ |
| $1640 \pm 50$ | | [25,26] EDWARDS | 82D | CBAL | $J/\psi \to \gamma 2\eta$ |
| $1730 \pm 10$ | $\pm 20$ | [27] ETKIN | 82C | MPS | $23\ \pi^- p \to n 2K^0_S$ |

[1] 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.
[2] This state may be different from $f_0(1710)$, see CLOSE 05.
[3] $J^P = 0^+$.
[4] T-matrix pole.
[5] Supersedes BARBERIS 99 and BARBERIS 99B.
[6] $J^P = 0^+$, supersedes by ARMSTRONG 89D.
[7] No $J^{PC}$ determination.
[8] $J^P = 2^+$.
[9] Breit-Wigner mass.
[10] Systematic errors not estimated.
[11] 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.
[12] Decaying to $f_0(1370) \pi \pi$.
[13] $J^P = 0^+$.
[14] Not seen by AMSLER 02.
[15] T-matrix pole, assuming $J^P = 0^+$
[16] No $J^{PC}$ determination.
[17] No $J^{PC}$ determination, width not determined.
[18] From a fit to the $0^+$ partial wave.
[19] ALDE 92D combines all the GAMS-2000 data.
[20] $J^P = 2^+$, superseded by FRENCH 99.
[21] From an analysis ignoring interference with $f'_2(1525)$.
[22] From an analysis including interference with $f'_2(1525)$.
[23] Superseded by ALDE 92D.
[24] 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.
[25] $J^P = 2^+$ preferred.
[26] From fit neglecting nearby $f'_2(1525)$. Replaced by BLOOM 83.

[27] Superseded by LONGACRE 86.




## $f_0(1710)$ WIDTH

| *VALUE* (MeV) | *EVTS* | *DOCUMENT ID* | *TECN* | *COMMENT* |
|---|---|---|---|---|
| **135 ± 8 OUR AVERAGE** | | Error includes scale factor of 1.1. | | |
| $100 \pm 24 {}^{+7}_{-22}$ | 4k | [28] CHEKANOV 08 | ZEUS | $e p \to K^0_S K^0_S X$ |
| $145 \pm 8 \pm 69$ | | ABLIKIM 06V | BES2 | $e^+ e^- \to J/\psi \to \gamma \pi^+ \pi^-$ |
| $125 \pm 25 {}^{+10}_{-15}$ | | [29] ABLIKIM 05Q | BES2 | $\psi(2S) \to \gamma \pi^+ \pi^- K^+ K^-$ |
| $125 \pm 20$ | | ABLIKIM 04E | BES2 | $J/\psi \to \omega K^+ K^-$ |
| $166 {}^{+5}_{-8} {}^{+15}_{-10}$ | | [30] BAI 03G | BES | $J/\psi \to \gamma K \overline{K}$ |
| $120 {}^{+50}_{-40}$ | | [30] BAI 00A | BES | $J/\psi \to \gamma (\pi^+ \pi^- \pi^+ \pi^-)$ |
| $120 \pm 26$ | | [31] BARBERIS 00E | | 450 $p p \to p_f \eta \eta p_s$ |
| $126 \pm 16 \pm 18$ | | [32] BARBERIS 99D | OMEG | 450 $p p \to K^+ K^-, \pi^+ \pi^-$ |
| $105 \pm 34$ | | [33] FRENCH 99 | | 300 $p p \to p_f (K^+ K^-) p_s$ |
| $166.4 \pm 33.2$ | | [34] AUGUSTIN 88 | DM2 | $J/\psi \to \gamma K^+ K^-, K^0_S K^0_S$ |
| $136 \pm 28$ | | [34] AUGUSTIN 87 | DM2 | $J/\psi \to \gamma \pi^+ \pi^-$ |
| $130 \pm 20$ | | [35] BALTRUSAIT...87 | MRK3 | $J/\psi \to \gamma K^+ K^-$ |
| $57 \pm 38$ | | [36] WILLIAMS 84 | MPSF | 200 $\pi^- N \to 2 K^0_S X$ |
| $160 \pm 80$ | | BLOOM 83 | CBAL | $J/\psi \to \gamma 2\eta$ |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $148 {}^{+40}_{-30}$ | | | | AMSLER | 06 | CBAR | $1.64\ \bar{p}p \rightarrow K^+K^-\pi^0$ |
| $188 \pm 13$ | | 80k | [29,37] | UMAN | 06 | E835 | $5.2\ \bar{p}p \rightarrow \eta\eta\pi^0$ |
| $250 \pm 30$ | | | | VLADIMIRSK... | 06 | SPEC | $40\ \pi^- p \rightarrow K^0_S K^0_S n$ |
| $270 {}^{+60}_{-30}$ | | | [38] | ABLIKIM | 05 | BES2 | $J/\psi \rightarrow \phi\pi^+\pi^-$ |
| $260 \pm 50$ | | | [29] | BINON | 05 | GAMS | $33\ \pi^- p \rightarrow \eta\eta n$ |
| $38 {}^{+20}_{-14}$ | | 74 | [37] | CHEKANOV | 04 | ZEUS | $ep \rightarrow K^0_S K^0_S X$ |
| $144 \pm 30$ | | | [39,40] | ANISOVICH | 03 | RVUE | |
| $320 {}^{+50}_{-20}$ | | | [40,41] | ANISOVICH | 03 | RVUE | |
| $102 \pm 26$ | | | | TIKHOMIROV | 03 | SPEC | $40.0\ \pi^- C \rightarrow K^0_S K^0_S K^0_L X$ |
| $267 \pm 44$ | | 3651 | [30,42] | NICHITIU | 02 | OBLX | |
| $220 \pm 40$ | | | [43,44] | ANISOVICH | 99B | SPEC | $0.6–1.2\ p\bar{p} \rightarrow \eta\eta\pi^0$ |
| $100 \pm 25$ | | | [30] | BARBERIS | 99 | OMEG | $450\ pp \rightarrow p_s p_f K^+K^-$ |
| $160 \pm 30$ | | | [30] | BARBERIS | 99B | OMEG | $450\ pp \rightarrow p_s p_f \pi^+\pi^-$ |
| $250 \pm 140$ | | | [45] | ANISOVICH | 98B | RVUE | Compilation |
| $30 \pm 7$ | | 57 | [46] | BARKOV | 98 | | $\pi^- p \rightarrow K^0_S K^0_S n$ |
| $103 \pm 18$ | ${}^{+30}_{-11}$ | | [35] | BAI | 96C | BES | $J/\psi \rightarrow \gamma K^+K^-$ |
| $85 \pm 24$ | ${}^{+22}_{-19}$ | | [30] | BAI | 96C | BES | $J/\psi \rightarrow \gamma K^+K^-$ |
| $56 \pm 19$ | | | | BALOSHIN | 95 | SPEC | $40\ \pi^- C \rightarrow K^0_S K^0_S X$ |
| $160 \pm 40$ | | | [47] | BUGG | 95 | MRK3 | $J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$ |
| $160 {}^{+60}_{-20}$ | | | [35] | BUGG | 95 | MRK3 | $J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$ |
| $264 \pm 25$ | | | [34] | 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 | | | [48] | ALDE | 92D | GAM2 | $38\ \pi^- p \rightarrow \eta\eta N^*$ |
| $181 \pm 30$ | | | [49] | ARMSTRONG | 89D | OMEG | $300\ pp \rightarrow ppK^+K^-$ |
| $104 \pm 30$ | | | [49] | ARMSTRONG | 89D | OMEG | $300\ pp \rightarrow ppK^0_S K^0_S$ |
| $30 \pm 20$ | | | [35] | BOLONKIN | 88 | SPEC | $40\ \pi^- p \rightarrow K^0_S K^0_S n$ |
| $350 \pm 150$ | | | [30] | BOLONKIN | 88 | SPEC | $40\ \pi^- p \rightarrow K^0_S K^0_S n$ |
| $148 \pm 17$ | | | [50] | FALVARD | 88 | DM2 | $J/\psi \rightarrow \phi K^+K^-, K^0_S K^0_S$ |
| $184 \pm 6$ | | | [51] | FALVARD | 88 | DM2 | $J/\psi \rightarrow \phi K^+K^-, K^0_S K^0_S$ |
| $122 {}^{+74}_{-15}$ | | | [52] | LONGACRE | 86 | RVUE | $22\ \pi^- p \rightarrow n2K^0_S$ |
| $200 \pm 100$ | | | | BURKE | 82 | MRK2 | $J/\psi \rightarrow \gamma 2\rho$ |
| $220 {}^{+100}_{-70}$ | | | [53,54] | EDWARDS | 82D | CBAL | $J/\psi \rightarrow \gamma 2\eta$ |
| $200 {}^{+156}_{-9}$ | | | [55] | ETKIN | 82B | MPS | $23\ \pi^- p \rightarrow n2K^0_S$ |

[28] 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.

[29] Breit-Wigner width.

[30] $J^P = 0^+$.

[31] T-matrix pole.

[32] Supersedes BARBERIS 99 and BARBERIS 99B.

[33] $J^P = 0^+$, supersedes by ARMSTRONG 89D.

[34] No $J^{PC}$ determination.
[35] $J^P = 2^+$.
[36] No $J^{PC}$ determination.
[37] Systematic errors not estimated.
[38] This state may be different from $f_0(1710)$, see CLOSE 05.
[39] (Solution I)
[40] 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.
[41] (Solution I)
[42] Decaying to $f_0(1370) \pi \pi$.
[43] $J^P = 0^+$.
[44] Not seen by AMSLER 02.
[45] T-matrix pole, assuming $J^P = 0^+$
[46] No $J^{PC}$ determination.
[47] From a fit to the $0^+$ partial wave.
[48] ALDE 92D combines all the GAMS-2000 data.
[49] $J^P = 2^+$, ($0^+$ excluded).
[50] From an analysis ignoring interference with $f'_2(1525)$.
[51] From an analysis including interference with $f'_2(1525)$.
[52] 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.
[53] $J^P = 2^+$ preferred.
[54] From fit neglecting nearby $f'_2(1525)$. Replaced by BLOOM 83.
[55] From an amplitude analysis of the $K^0_S K^0_S$ system, superseded by LONGACRE 86.

## $f_0(1710)$ DECAY MODES

| | Mode | Fraction ($\Gamma_i/\Gamma$) |
|---|---|---|
| $\Gamma_1$ | $K\overline{K}$ | seen |
| $\Gamma_2$ | $\eta\eta$ | seen |
| $\Gamma_3$ | $\pi\pi$ | seen |
| $\Gamma_4$ | $\gamma\gamma$ | |
| $\Gamma_5$ | $\omega\omega$ | seen |

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

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

| *VALUE* (eV) | *CL%* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| **<110** | 95 | [56] BEHREND | 89C | CELL | $\gamma\gamma \to K^0_S K^0_S$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| <480 | 95 | ALBRECHT | 90G | ARG | $\gamma\gamma \to K^+ K^-$ |
| <280 | 95 | [56] ALTHOFF | 85B | TASS | $\gamma\gamma \to K\overline{K}\pi$ |

[56] 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 | [57] BARATE | 00E | ALEP | $\gamma\gamma \to \pi^+\pi^-$ |

[57] Assuming spin 0.

## $f_0(1710)$ BRANCHING RATIOS

### $\Gamma(K\overline{K})/\Gamma_{total}$ — $\Gamma_1/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $0.36\pm0.12$ | ALBALADEJO | 08 | RVUE | |
| $0.38^{+0.09}_{-0.19}$ | [58,59] LONGACRE | 86 | MPS | $22\ \pi^- p \to n 2K^0_S$ |

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

| VALUE | DOCUMENT ID | | TECN |
|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| $0.22\pm0.12$ | ALBALADEJO | 08 | RVUE |
| $0.18^{+0.03}_{-0.13}$ | [58,59] LONGACRE | 86 | RVUE |

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

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| not seen | AMSLER | 02 | CBAR | $0.9\ \overline{p}p \to \pi^0\eta\eta,\ \pi^0\pi^0\pi^0$ |
| $0.039^{+0.002}_{-0.024}$ | [58,59] LONGACRE | 86 | RVUE | |

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

| VALUE | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $\mathbf{0.41^{+0.11}_{-0.17}}$ | | ABLIKIM | 06V | BES2 | $e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| $0.32\pm0.14$ | | ALBALADEJO | 08 | RVUE | |
| $<0.11$ | 95 | [60] ABLIKIM | 04E | BES2 | $J/\psi \to \omega K^+K^-$ |
| $5.8\ ^{+9.1}_{-5.5}$ | | [61] ANISOVICH | 02D | SPEC | Combined fit |
| $0.2\ \pm0.024\pm0.036$ | | BARBERIS | 99D | OMEG | $450\ pp \to K^+K^-,\ \pi^+\pi^-$ |
| $0.39\pm0.14$ | | ARMSTRONG | 91 | OMEG | $300\ pp \to pp\pi\pi,\ ppK\overline{K}$ |

### $\Gamma(\eta\eta)/\Gamma(K\overline{K})$ — $\Gamma_2/\Gamma_1$

| 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. • • • | | | | | |
| $0.46^{+0.70}_{-0.38}$ | | [61] ANISOVICH | 02D | SPEC | Combined fit |
| $<0.02$ | 90 | [62] PROKOSHKIN | 91 | GA24 | $300\ \pi^- p \to \pi^- p\eta\eta$ |

### $\Gamma(\omega\omega)/\Gamma_{total}$ $\Gamma_5/\Gamma$

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

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

[59] Fit with constrained inelasticity.

[60] Using data from ABLIKIM 04A.

[61] From a combined K-matrix analysis of Crystal Barrel (0. $p\overline{p} \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$), GAMS ($\pi p \rightarrow \pi^0\pi^0 n$, $\eta\eta n$, $\eta\eta' n$), and BNL ($\pi p \rightarrow K\overline{K} n$) data.

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

## $f_0(1710)$ REFERENCES


| | | | | |
|---|---|---|---|---|
| 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.) |
| CHEKANOV | 04 | PL B578 33 | S. Chekanov *et al.* | (ZEUS Collab.) |
| PDG | 04 | PL B592 1 | S. Eidelman *et al.* | (PDG 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, GAM4 Collab.) |
| | | Translated from DANS 316 900. | | |

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| 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) |