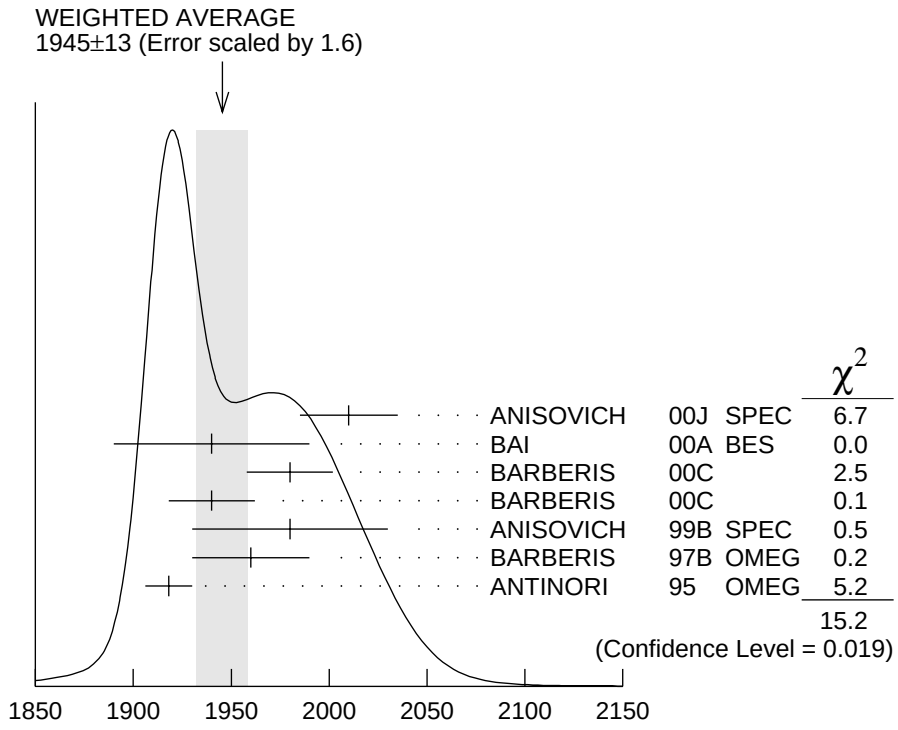
# $f_2(1950)$

$I^G(J^{PC}) = 0^+(2^{++})$

## $f_2(1950)$ MASS

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *CHG* | *COMMENT* |
|---|---|---|---|---|---|
| **1945±13 OUR AVERAGE** | Error includes scale factor of 1.6. See the ideogram below. | | | | |
| 2010±25 | ANISOVICH | 00J | SPEC | | |
| 1940±50 | BAI | 00A | BES | | $J/\psi \to \gamma(\pi^+\pi^-\pi^+\pi^-)$ |
| 1980±22 | [1] BARBERIS | 00C | | | 450 $pp \to pp4\pi$ |
| 1940±22 | [2] BARBERIS | 00C | | | 450 $pp \to pp2\pi 2\pi^0$ |
| 1980±50 | ANISOVICH | 99B | SPEC | | 1.35–1.94 $p\overline{p} \to \eta\eta\pi^0$ |
| 1960±30 | BARBERIS | 97B | OMEG | | 450 $pp \to pp2(\pi^+\pi^-)$ |
| 1918±12 | ANTINORI | 95 | OMEG | | 300,450 $pp \to pp2(\pi^+\pi^-)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| 1980± 2±14 | ABE | 04 | BELL | | 10.6 $e^+e^- \to e^+e^-K^+K^-$ |
| 1867±46 | [3] AMSLER | 02 | CBAR | | 0.9 $\overline{p}p \to \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$ |
| ~ 1996 | HASAN | 94 | RVUE | | $\overline{p}p \to \pi\pi$ |
| ~ 1990 | [4] OAKDEN | 94 | RVUE | | 0.36–1.55 $\overline{p}p \to \pi\pi$ |
| 1950±15 | [5] ASTON | 91 | LASS | 0 | 11 $K^-p \to \Lambda K\overline{K}\pi\pi$ |

[1] Decaying into $\pi^+\pi^-2\pi^0$.
[2] Decaying into $2(\pi^+\pi^-)$.
[3] T-matrix pole.
[4] From solution B of amplitude analysis of data on $\overline{p}p \to \pi\pi$. See however KLOET 96 who fit $\pi^+\pi^-$ only and find waves only up to $J = 3$ to be important but not significantly resonant.
[5] Cannot determine spin to be 2.




## $f_2(1950)$ WIDTH

| *VALUE* (MeV) | *DOCUMENT ID* | | *TECN* | *CHG* | *COMMENT* |
|---|---|---|---|---|---|
| **475± 19 OUR AVERAGE** | | | | | |
| 495± 35 | ANISOVICH | 00J | SPEC | | |
| $380^{+120}_{-90}$ | BAI | 00A | BES | | $J/\psi \to \gamma(\pi^+\pi^-\pi^+\pi^-)$ |
| 520± 50 | [6] BARBERIS | 00C | | | 450 $pp \to pp4\pi$ |
| 485± 55 | [7] BARBERIS | 00C | | | 450 $pp \to pp4\pi$ |
| 500±100 | ANISOVICH | 99B | SPEC | | 1.35–1.94 $p\overline{p} \to \eta\eta\pi^0$ |
| 460± 40 | BARBERIS | 97B | OMEG | | 450 $pp \to pp2(\pi^+\pi^-)$ |
| 390± 60 | ANTINORI | 95 | OMEG | | 300,450 $pp \to pp2(\pi^+\pi^-)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| 297± 12±6 | ABE | 04 | BELL | | 10.6 $e^+e^- \to e^+e^-K^+K^-$ |
| 385± 58 | [8] AMSLER | 02 | CBAR | | 0.9 $\overline{p}p \to \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$ |
| ∼ 134 | HASAN | 94 | RVUE | | $\overline{p}p \to \pi\pi$ |
| ∼ 100 | [9] OAKDEN | 94 | RVUE | | 0.36–1.55 $\overline{p}p \to \pi\pi$ |
| 250± 50 | [10] ASTON | 91 | LASS | 0 | 11 $K^-p \to \Lambda K\overline{K}\pi\pi$ |

[6] Decaying into $\pi^+\pi^-2\pi^0$.
[7] Decaying into $2(\pi^+\pi^-)$.
[8] T-matrix pole.
[9] From solution B of amplitude analysis of data on $\overline{p}p \to \pi\pi$. See however KLOET 96 who fit $\pi^+\pi^-$ only and find waves only up to $J = 3$ to be important but not significantly resonant.
[10] Cannot determine spin to be 2.

## $f_2(1950)$ DECAY MODES

| | Mode | Fraction ($\Gamma_i/\Gamma$) |
|---|---|---|
| $\Gamma_1$ | $K^*(892)\overline{K}^*(892)$ | seen |
| $\Gamma_2$ | $\pi^+\pi^-$ | seen |
| $\Gamma_3$ | $4\pi$ | seen |
| $\Gamma_4$ | $\pi^+\pi^-\pi^+\pi^-$ | |
| $\Gamma_5$ | $a_2(1320)\pi$ | |
| $\Gamma_6$ | $f_2(1270)\pi\pi$ | |
| $\Gamma_7$ | $\eta\eta$ | seen |
| $\Gamma_8$ | $K\overline{K}$ | seen |
| $\Gamma_9$ | $\gamma\gamma$ | seen |

## $f_2(1950)$ $\Gamma$(i)$\Gamma(\gamma\gamma)/\Gamma$(total)

### $\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_8\Gamma_9/\Gamma$

| VALUE (eV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $122\pm4\pm26$ | [11] ABE | 04 | BELL | 10.6 $e^+e^- \to e^+e^-K^+K^-$ |

[11] Assuming spin 2.

## $f_2(1950)$ BRANCHING RATIOS

### $\Gamma(K^*(892)\overline{K}^*(892))/\Gamma_{\text{total}}$ $\Gamma_1/\Gamma$

| VALUE | DOCUMENT ID | | TECN | CHG | COMMENT |
|---|---|---|---|---|---|
| **seen** | ASTON | 91 | LASS | 0 | 11 $K^-p \to \Lambda K\overline{K}\pi\pi$ |

### $\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$ $\Gamma_5/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| not seen | BARBERIS | 00B | | 450 $pp \to p_f\eta\pi^+\pi^-p_s$ |
| not seen | BARBERIS | 00C | | 450 $pp \to p_f 4\pi p_s$ |
| possibly seen | BARBERIS | 97B | OMEG | 450 $pp \to pp2(\pi^+\pi^-)$ |

### $\Gamma(\eta\eta)/\Gamma(4\pi)$ $\Gamma_7/\Gamma_3$

| VALUE | CL% | DOCUMENT ID | | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $<5.0\times10^{-3}$ | 90 | BARBERIS | 00E | 450 $pp \to p_f\eta\eta p_s$ |

### $\Gamma(\eta\eta)/\Gamma(\pi^+\pi^-)$ $\Gamma_7/\Gamma_2$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **0.14±0.05** | AMSLER | 02 | CBAR | 0.9 $\overline{p}p \to \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$ |

## $f_2(1950)$ REFERENCES


| | | | | |
|---|---|---|---|---|
| ABE | 04 | EPJ C32 323 | K. Abe *et al.* | (BELLE Collab.) |
| AMSLER | 02 | EPJ C23 29 | C. Amsler *et al.* | |
| ANISOVICH | 00J | PL B491 47 | A.V. Anisovich *et al.* | |
| BAI | 00A | PL B472 207 | J.Z. Bai *et al.* | (BES Collab.) |
| BARBERIS | 00B | PL B471 435 | D. Barberis *et al.* | (WA 102 Collab.) |
| BARBERIS | 00C | PL B471 440 | D. Barberis *et al.* | (WA 102 Collab.) |
| BARBERIS | 00E | PL B479 59 | D. Barberis *et al.* | (WA 102 Collab.) |
| ANISOVICH | 99B | PL B449 154 | A.V. Anisovich *et al.* | |
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| KLOET | 96 | PR D53 6120 | W.M. Kloet, F. Myhrer | (RUTG, NORD) |
| ANTINORI | 95 | PL B353 589 | F. Antinori *et al.* | (ATHU, BARI, BIRM+) JP |
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## OTHER RELATED PAPERS


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| LONGACRE | 04 | PR D70 094041 | R.S. Longacre, S.J. Lindenbaum | |
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