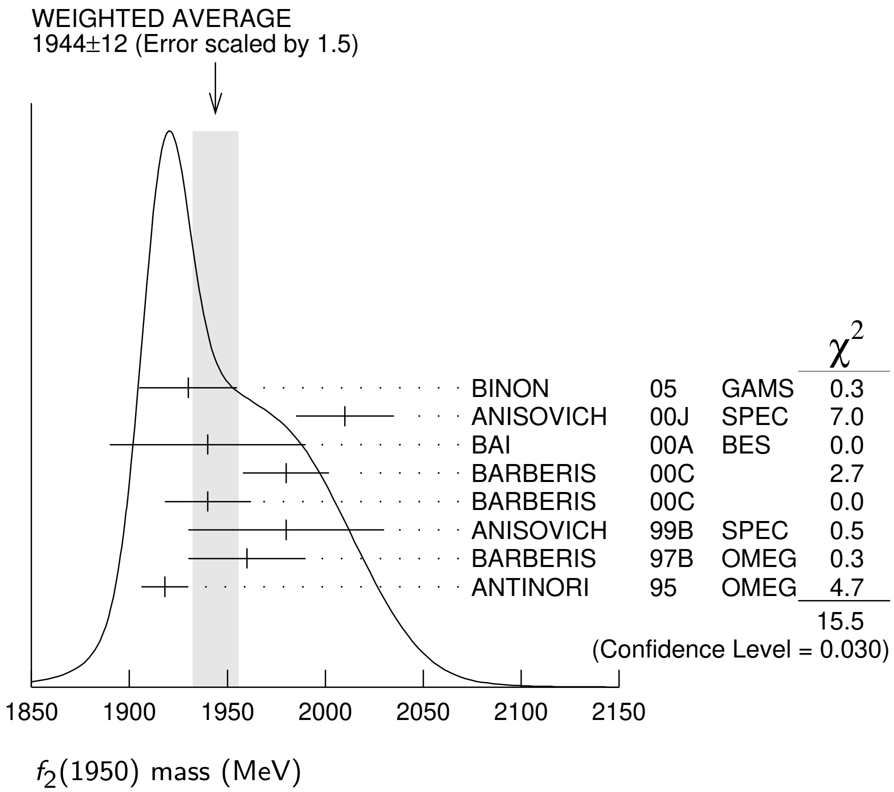
$f_2(1950)$

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

$f_2(1950)$ MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1944±12 OUR AVERAGE	Error includes scale factor of 1.5. See the ideogram below.				
1930±25	[1] BINON	05	GAMS		33 $\pi^- p \to \eta\eta n$
2010±25	ANISOVICH	00J	SPEC		
1940±50	BAI	00A	BES		$J/\psi \to \gamma(\pi^+\pi^-\pi^+\pi^-)$
1980±22	[2] BARBERIS	00C			450 $pp \to pp4\pi$
1940±22	[3] BARBERIS	00C			450 $pp \to pp2\pi2\pi^0$
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	[4] 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	[5] OAKDEN	94	RVUE		0.36–1.55 $\overline{p}p \to \pi\pi$
1950±15	[6] ASTON	91	LASS	0	11 $K^- p \to \Lambda K\overline{K}\pi\pi$

[1] First solution, PWA is ambiguous.
[2] Decaying into $\pi^+\pi^-2\pi^0$.
[3] Decaying into $2(\pi^+\pi^-)$.
[4] T-matrix pole.
[5] 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.
[6] Cannot determine spin to be 2.



$f_2(1950)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
472± 18 OUR AVERAGE					
450± 50	[7] BINON	05	GAMS		33 $\pi^- p \to \eta\eta n$
495± 35	ANISOVICH	00J	SPEC		
380^{+120}_{-90}	BAI	00A	BES		$J/\psi \to \gamma(\pi^+\pi^-\pi^+\pi^-)$
520± 50	[8] BARBERIS	00C			450 $pp \to pp4\pi$
485± 55	[9] 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	[10] 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	[11] OAKDEN	94	RVUE		0.36–1.55 $\overline{p}p \to \pi\pi$
250± 50	[12] ASTON	91	LASS	0	11 $K^- p \to \Lambda K\overline{K}\pi\pi$

[7] First solution, PWA is ambiguous.
[8] Decaying into $\pi^+\pi^-2\pi^0$.
[9] Decaying into $2(\pi^+\pi^-)$.
[10] T-matrix pole.

[11] From solution B of amplitude analysis of data on $\overline{p}p \rightarrow \pi\pi$. See however KLOET 96 who fit $\pi^+\pi^-$ only and find waves only up to $J = 3$ to be important but not significantly resonant.
[12] Cannot determine spin to be 2.

f_2(1950) DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$K^*(892)\overline{K}^*(892)$	seen
Γ_2	$\pi^+\pi^-$	seen
Γ_3	4π	seen
Γ_4	$\pi^+\pi^-\pi^+\pi^-$	
Γ_5	$a_2(1320)\pi$	
Γ_6	$f_2(1270)\pi\pi$	
Γ_7	$\eta\eta$	seen
Γ_8	$K\overline{K}$	seen
Γ_9	$\gamma\gamma$	seen

f_2(1950) $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

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

VALUE (eV)	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$122\pm4\pm26$	[13] ABE	04	BELL	10.6 $e^+e^- \rightarrow e^+e^-K^+K^-$

[13] Assuming spin 2.

f_2(1950) BRANCHING RATIOS

$\Gamma(K^*(892)\overline{K}^*(892))/\Gamma_{\text{total}}$ — Γ_1/Γ

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

$\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$ — Γ_5/Γ

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

$\Gamma(\eta\eta)/\Gamma(4\pi)$ — Γ_7/Γ_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 $pp \rightarrow p_f\eta\eta p_s$

$\Gamma(\eta\eta)/\Gamma(\pi^+\pi^-)$ **Γ_7/Γ_2**

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

f_2(1950) REFERENCES

BINON	05	PAN 68 960	F. Binon *et al.*	
		Translated from YAF 68 998.		
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.*	
BARBERIS	97B	PL B413 217	D. Barberis *et al.*	(WA 102 Collab.)
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
HASAN	94	PL B334 215	A. Hasan, D.V. Bugg	(LOQM)
OAKDEN	94	NP A574 731	M.N. Oakden, M.R. Pennington	(DURH)
ASTON	91	NPBPS B21 5	D. Aston *et al.*	(LASS Collab.)

OTHER RELATED PAPERS

ANISOVICH	05	JETPL 80 715	V.V. Anisovich	
		Translated from ZETFP 80 845.		
ANISOVICH	05A	JETPL 81 417	V.V. Anisovich, A.V. Sarantsev	
		Translated from ZETFP 81 531.		
ANISOVICH	05C	IJMP A20 6327	V.V. Anisovich, M.A. Matveev, A.V. Sarantsev	
LONGACRE	04	PR D70 094041	R.S. Longacre, S.J. Lindenbaum	
ALBRECHT	88N	PL B212 528	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	87Q	PL B198 255	H. Albrecht *et al.*	(ARGUS Collab.)
ARMSTRONG	87C	ZPHY C34 33	T.A. Armstrong *et al.*	(CERN, BIRM, BARI+)