$f_2(1565)$

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

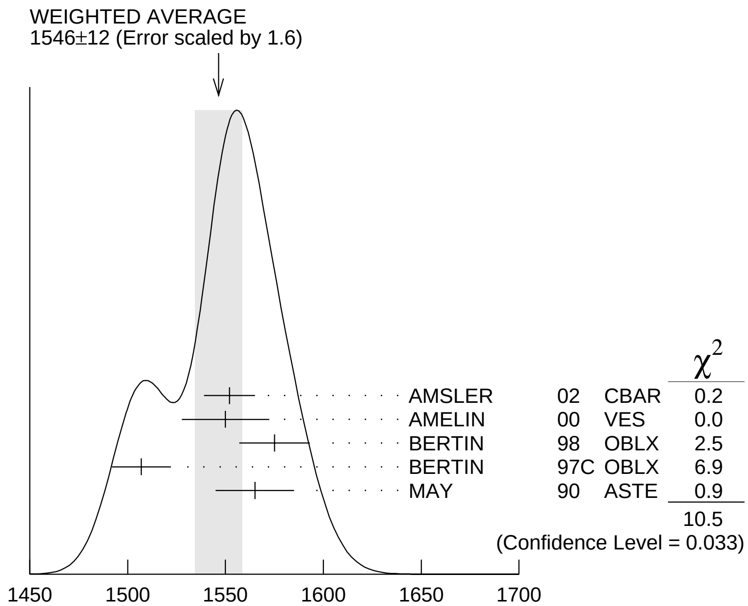
OMITTED FROM SUMMARY TABLE

Seen in antinucleon-nucleon annihilation at rest. See also minireview under non-$q\overline{q}$ candidates. (See the index for the page number.) Needs confirmation.

$f_2(1565)$ MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
1546 ±12 OUR AVERAGE	Error includes scale factor of 1.6. See the ideogram below.			
1552 ±13	[1] AMSLER	02	CBAR	0.9 $\overline{p}p \rightarrow \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$
1550 ±10 ±20	AMELIN	00	VES	37 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
1575 ±18	BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
1507 ±15	[1] BERTIN	97C	OBLX	0.0 $\overline{p}p \rightarrow \pi^+\pi^-\pi^0$
1565 ±20	MAY	90	ASTE	0.0 $\overline{p}p \rightarrow \pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1544.7± 3.0	VLADIMIRSKII	00	SPEC	40 $\pi^- p \rightarrow K^0_S K^0_S X$
1598 ±11 ± 9	BAKER	99B	SPEC	0 $\overline{p}p \rightarrow \omega\omega\pi^0$
1534 ±20	[2] ABELE	96C	RVUE	Compilation
∼ 1552	[3] AMSLER	95D	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
1598 ±72	BALOSHIN	95	SPEC	40 π^- C $\rightarrow K^0_S K^0_S X$
1566 $^{+80}_{-50}$	[4] ANISOVICH	94	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0, \eta\eta\pi^0$
1502 ± 9	ADAMO	93	OBLX	$\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
1488 ±10	[5] ARMSTRONG	93C	E760	$\overline{p}p \rightarrow \pi^0\eta\eta \rightarrow 6\gamma$
1508 ±10	[5] ARMSTRONG	93D	E760	$\overline{p}p \rightarrow 3\pi^0 \rightarrow 6\gamma$
1525 ±10	[5] ARMSTRONG	93D	E760	$\overline{p}p \rightarrow \eta\pi^0\pi^0 \rightarrow 6\gamma$
∼ 1504	[6] WEIDENAUER	93	ASTE	0.0 $\overline{p}N \rightarrow 3\pi^- 2\pi^+$
1540 ±15	[5] ADAMO	92	OBLX	$\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
1515 ±10	[7] AKER	91	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0$
1477 ± 5	BRIDGES	86C	DBC	0.0 $\overline{p}N \rightarrow 3\pi^- 2\pi^+$

[1] T-matrix pole.
[2] T-matrix pole, large coupling to $\rho\rho$ and $\omega\omega$, could be $f_2(1640)$.
[3] Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[4] From a simultaneous analysis of the annihilations $\overline{p}p \rightarrow 3\pi^0, \pi^0\eta\eta$ including AKER 91 data.
[5] J^P not determined, could be partly $f_0(1500)$.
[6] J^P not determined.
[7] Superseded by AMSLER 95B.



$f_2(1565)$ mass (MeV)

$f_2(1565)$ WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
126 ± 12 OUR AVERAGE				
113 ± 23	[8] AMSLER	02	CBAR	0.9 $\overline{p}p \rightarrow \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$
130 ± 20 ± 40	AMELIN	00	VES	37 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
119 ± 24	BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
130 ± 20	[8] BERTIN	97C	OBLX	0.0 $\overline{p}p \rightarrow \pi^+\pi^-\pi^0$
170 ± 40	MAY	90	ASTE	0.0 $\overline{p}p \rightarrow \pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
10.3 ± 3.0	VLADIMIRSKII	00	SPEC	40 $\pi^- p \rightarrow K^0_S K^0_S X$
180 ± 60	[9] ABELE	96C	RVUE	Compilation
~ 142	[10] AMSLER	95D	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
263 ± 101	BALOSHIN	95	SPEC	40 π^- C $\rightarrow K^0_S K^0_S$ X
166^{+80}_{-20}	[11] ANISOVICH	94	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0, \eta\eta\pi^0$
130 ± 10	[12] ADAMO	93	OBLX	$\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
148 ± 27	[13] ARMSTRONG	93C	E760	$\overline{p}p \rightarrow \pi^0\eta\eta \rightarrow 6\gamma$
103 ± 15	[13] ARMSTRONG	93D	E760	$\overline{p}p \rightarrow 3\pi^0 \rightarrow 6\gamma$
111 ± 10	[13] ARMSTRONG	93D	E760	$\overline{p}p \rightarrow \eta\pi^0\pi^0 \rightarrow 6\gamma$
~ 206	[14] WEIDENAUER	93	ASTE	0.0 $\overline{p}N \rightarrow 3\pi^- 2\pi^+$
132 ± 37	[13] ADAMO	92	OBLX	$\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
120 ± 10	[15] AKER	91	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0$
116 ± 9	BRIDGES	86C	DBC	0.0 $\overline{p}N \rightarrow 3\pi^- 2\pi^+$

[8] T-matrix pole.
[9] T-matrix pole, large coupling to $\rho\rho$ and $\omega\omega$, could be $f_2(1640)$.
[10] Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
[11] From a simultaneous analysis of the annihilations $\overline{p}p \rightarrow 3\pi^0, \pi^0\eta\eta$ including AKER 91 data.
[12] Supersedes ADAMO 92.
[13] J^P not determined, could be partly $f_0(1500)$.
[14] J^P not determined.
[15] Superseded by AMSLER 95B.

$f_2(1565)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\pi\pi$	seen
Γ_2	$\pi^+\pi^-$	seen
Γ_3	$\pi^0\pi^0$	seen
Γ_4	$\rho^0\rho^0$	seen
Γ_5	$2\pi^+2\pi^-$	seen
Γ_6	$\eta\eta$	seen
Γ_7	$a_2(1320)\pi$	not seen
Γ_8	$\omega\omega$	seen

$f_2(1565)$ BRANCHING RATIOS

$\Gamma(\pi\pi)/\Gamma_{total}$ — Γ_1/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
seen	BAKER	99B	SPEC	0 $\overline{p}p \rightarrow \omega\omega\pi^0$

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ — Γ_2/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
seen	BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
not seen	[16] ANISOVICH	94B	RVUE	$\overline{p}p \rightarrow \pi^+\pi^-\pi^0$
seen	MAY	89	ASTE	$\overline{p}p \rightarrow \pi^+\pi^-\pi^0$

[16] ANISOVICH 94B is from a reanalysis of MAY 90.

$\Gamma(\pi^+\pi^-)/\Gamma(\rho^0\rho^0)$ — Γ_2/Γ_4

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.042 ± 0.013	BRIDGES	86B	DBC	$\overline{p}N \rightarrow 3\pi^-2\pi^+$

$\Gamma(\pi^0\pi^0)/\Gamma_{total}$ — Γ_3/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
seen	AMSLER	95B	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0$

$\Gamma(\eta\eta)/\Gamma(\pi^0\pi^0)$ — Γ_6/Γ_3

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$0.024\pm0.005\pm0.012$	[17] ARMSTRONG 93C	E760	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$

[17] J^P not determined, could be partly $f_0(1500)$.

$\Gamma(\omega\omega)/\Gamma_{total}$ — Γ_8/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
seen	BAKER 99B	SPEC	$0\ \overline{p}p \to \omega\omega\pi^0$

$f_2(1565)$ REFERENCES

AMSLER	02	EPJ C23 29	C. Amsler *et al.*	
AMELIN	00	NP A668 83	D. Amelin *et al.*	(VES Collab.)
VLADIMIRSKII	00	JETPL 26 486 Translated from ZETFP 72 698.	V.V. Vladimirskii *et al.*	
BAKER	99B	PL B467 147	C.A. Baker *et al.*	
BERTIN	98	PR D57 55	A. Bertin *et al.*	(OBELIX Collab.)
BERTIN	97C	PL B408 476	A. Bertin *et al.*	(OBELIX Collab.)
ABELE	96C	NP A609 562	A. Abele *et al.*	(Crystal Barrel Collab.)
AMSLER	95B	PL B342 433	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	95C	PL B353 571	C. Amsler *et al.*	(Crystal Barrel Collab.)
AMSLER	95D	PL B355 425	C. Amsler *et al.*	(Crystal Barrel Collab.)
BALOSHIN	95	PAN 58 46 Translated from YAF 58 50.	O.N. Baloshin *et al.*	(ITEP)
AMSLER	94D	PL B333 277	C. Amsler *et al.*	(Crystal Barrel Collab.)
ANISOVICH	94	PL B323 233	V.V. Anisovich *et al.*	(Crystal Barrel Collab.)
ANISOVICH	94B	PR D50 1972	V.V. Anisovich *et al.*	(LOQM)
ADAMO	93	NP A558 13C	A. Adamo *et al.*	(OBELIX Collab.)
ARMSTRONG	93C	PL B307 394	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
ARMSTRONG	93D	PL B307 399	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
WEIDENAUER	93	ZPHY C59 387	P. Weidenauer *et al.*	(ASTERIX Collab.)
ADAMO	92	PL B287 368	A. Adamo *et al.*	(OBELIX Collab.)
AKER	91	PL B260 249	E. Aker *et al.*	(Crystal Barrel Collab.)
MAY	90	ZPHY C46 203	B. May *et al.*	(ASTERIX Collab.)
MAY	89	PL B225 450	B. May *et al.*	(ASTERIX Collab.) IJP
BRIDGES	86B	PRL 56 215	D.L. Bridges *et al.*	(SYRA, CASE)
BRIDGES	86C	PRL 57 1534	D.L. Bridges *et al.*	(SYRA)