NODE=M123

$f_2(1565)$

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

OMITTED FROM SUMMARY TABLE

Seen in antinucleon-nucleon annihilation at rest. Needs confirmation.

NODE=M123

$f_2(1565)$ MASS

NODE=M123205

NODE=M123M

VALUE (MeV)		DOCUMENT ID		TECN	COMMENT
1562±13 OUR AVERAGE		Error includes scale factor of 2.1. See the ideogram below.			
1590±10	1	AMELIN	06	VES	36 $\pi^- p \to \omega\omega n$
1552±13	2	AMSLER	02	CBAR	0.9 $\overline{p}p \to \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$
1550±10±20		AMELIN	00	VES	37 $\pi^- p \to \eta\pi^+\pi^- n$
1575±18		BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \to \pi^+\pi^+\pi^-$
1507±15	2	BERTIN	97C	OBLX	0.0 $\overline{p}p \to \pi^+\pi^-\pi^0$
1565±20		MAY	90	ASTE	0.0 $\overline{p}p \to \pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1598±11± 9		BAKER	99B	SPEC	0 $\overline{p}p \to \omega\omega\pi^0$
1534±20	3	ABELE	96C	RVUE	Compilation
~ 1552	4	AMSLER	95D	CBAR	0.0 $\overline{p}p \to \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$
1598±72		BALOSHIN	95	SPEC	40 π^- C $\to K^0_S K^0_S X$
1566^{+80}_{-50}	5	ANISOVICH	94	CBAR	0.0 $\overline{p}p \to 3\pi^0, \eta\eta\pi^0$
1502± 9		ADAMO	93	OBLX	$\overline{n}p \to \pi^+\pi^+\pi^-$
1488±10	6	ARMSTRONG	93C	E760	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$
1508±10	6	ARMSTRONG	93D	E760	$\overline{p}p \to 3\pi^0 \to 6\gamma$
1525±10	6	ARMSTRONG	93D	E760	$\overline{p}p \to \eta\pi^0\pi^0 \to 6\gamma$
~ 1504	7	WEIDENAUER	93	ASTE	0.0 $\overline{p}N \to 3\pi^- 2\pi^+$
1540±15	6	ADAMO	92	OBLX	$\overline{n}p \to \pi^+\pi^+\pi^-$
1515±10	8	AKER	91	CBAR	0.0 $\overline{p}p \to 3\pi^0$
1477± 5		BRIDGES	86C	DBC	0.0 $\overline{p}N \to 3\pi^- 2\pi^+$

OCCUR=2

[1] Supersedes the $\omega\omega$ state of BELADIDZE 92B earlier assigned to the $f_2(1640)$. NODE=M123M;LINKAGE=AM

[2] T-matrix pole. NODE=M123M;LINKAGE=G

[3] T-matrix pole, large coupling to $\rho\rho$ and $\omega\omega$, could be $f_2(1640)$. NODE=M123M;LINKAGE=AA

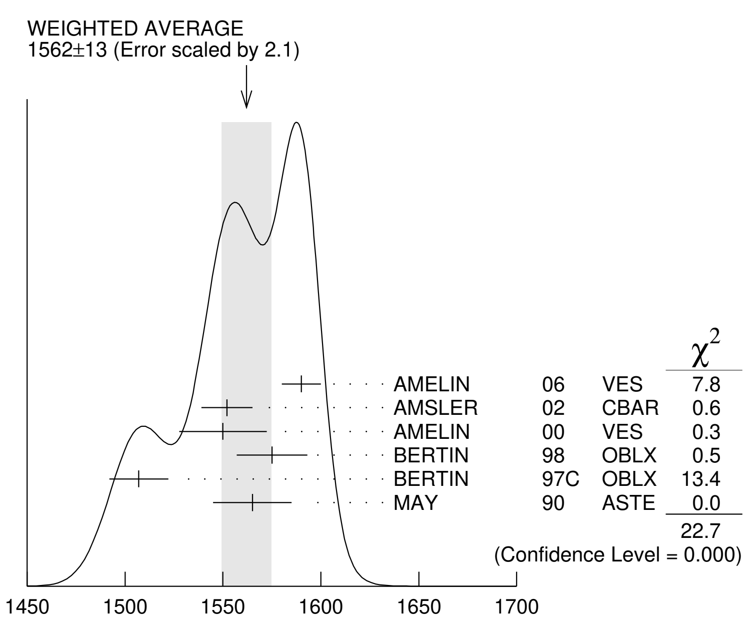
[4] Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D. NODE=M123M;LINKAGE=AB

[5] From a simultaneous analysis of the annihilations $\overline{p}p \to 3\pi^0, \pi^0\eta\eta$ including AKER 91 data. NODE=M123M;LINKAGE=C

[6] J^P not determined, could be partly $f_0(1500)$. NODE=M123M;LINKAGE=E

[7] J^P not determined. NODE=M123M;LINKAGE=F

[8] Superseded by AMSLER 95B. NODE=M123M;LINKAGE=BA



$f_2(1565)$ mass (MeV)

$f_2(1565)$ WIDTH

NODE=M123210

NODE=M123W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
134± 8 OUR AVERAGE				
140± 11	[9] AMELIN	06	VES	36 $\pi^- p \rightarrow \omega\omega n$
113± 23	[10] 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	[10] 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. • • •				
180± 60	[11] ABELE	96C	RVUE	Compilation
∼ 142	[12] 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}	[13] ANISOVICH	94	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0, \eta\eta\pi^0$
130± 10	[14] ADAMO	93	OBLX	$\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
148± 27	[15] ARMSTRONG	93C	E760	$\overline{p}p \rightarrow \pi^0\eta\eta \rightarrow 6\gamma$
103± 15	[15] ARMSTRONG	93D	E760	$\overline{p}p \rightarrow 3\pi^0 \rightarrow 6\gamma$
111± 10	[15] ARMSTRONG	93D	E760	$\overline{p}p \rightarrow \eta\pi^0\pi^0 \rightarrow 6\gamma$
∼ 206	[16] WEIDENAUER	93	ASTE	0.0 $\overline{p}N \rightarrow 3\pi^- 2\pi^+$
132± 37	[15] ADAMO	92	OBLX	$\overline{n}p \rightarrow \pi^+\pi^+\pi^-$
120± 10	[17] AKER	91	CBAR	0.0 $\overline{p}p \rightarrow 3\pi^0$
116± 9	BRIDGES	86C	DBC	0.0 $\overline{p}N \rightarrow 3\pi^- 2\pi^+$

OCCUR=2

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

NODE=M123W;LINKAGE=AM
NODE=M123W;LINKAGE=G
NODE=M123W;LINKAGE=CC
NODE=M123W;LINKAGE=AB
NODE=M123W;LINKAGE=D
NODE=M123W;LINKAGE=C
NODE=M123W;LINKAGE=E
NODE=M123W;LINKAGE=F
NODE=M123W;LINKAGE=BA

$f_2(1565)$ DECAY MODES

NODE=M123215;NODE=M123

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$\pi\pi$	seen	DESIG=6;OUR EST;→ NOT CHECKED ←
Γ_2	$\pi^+\pi^-$	seen	DESIG=1;OUR EST;→ NOT CHECKED ←
Γ_3	$\pi^0\pi^0$	seen	DESIG=3;OUR EST;→ NOT CHECKED ←
Γ_4	$\rho^0\rho^0$	seen	DESIG=2;OUR EST;→ NOT CHECKED ←
Γ_5	$2\pi^+2\pi^-$	seen	DESIG=5;OUR EST;→ NOT CHECKED ←
Γ_6	$\eta\eta$	seen	DESIG=4;OUR EST;→ NOT CHECKED ←
Γ_7	$a_2(1320)\pi$		DESIG=8
Γ_8	$\omega\omega$	seen	DESIG=7;OUR EST;→ NOT CHECKED ←
Γ_9	$K\overline{K}$		DESIG=9
Γ_{10}	$\gamma\gamma$		DESIG=10

$f_2(1565)$ PARTIAL WIDTHS

NODE=M123225

$\Gamma(\eta\eta)$ Γ_6

NODE=M123W3
NODE=M123W3

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.2±0.3	870	[18] SCHEGELSKY	06A	RVUE	$\gamma\gamma \rightarrow K^0_S K^0_S$

$\Gamma(K\overline{K})$ Γ_9

NODE=M123W1
NODE=M123W1

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.0±1.0	870	[18] SCHEGELSKY	06A	RVUE	$\gamma\gamma \rightarrow K^0_S K^0_S$

$\Gamma(\gamma\gamma)$ — Γ_{10}

NODE=M123W2
NODE=M123W2

VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.70±0.14	870	[18] SCHEGELSKY 06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$

[18] From analysis of L3 data at 91 and 183–209 GeV, using $f_2(1565)$ mass of 1570 MeV, width of 160 MeV, $\Gamma(\pi\pi)$ = 25 MeV, and SU(3) relations.

NODE=M123W1;LINKAGE=SC

$f_2(1565)$ BRANCHING RATIOS

NODE=M123220

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

NODE=M123R5
NODE=M123R5

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

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

NODE=M123R1
NODE=M123R1

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 $\overline{n}p \to \pi^+\pi^+\pi^-$
not seen	[19] ANISOVICH 94B	RVUE	$\overline{p}p \to \pi^+\pi^-\pi^0$
seen	MAY 89	ASTE	$\overline{p}p \to \pi^+\pi^-\pi^0$

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

NODE=M123R1;LINKAGE=A

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

NODE=M123R3
NODE=M123R3

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

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

NODE=M123R2
NODE=M123R2

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

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

NODE=M123R4
NODE=M123R4

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.024±0.005±0.012	[20] ARMSTRONG 93C	E760	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$

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

NODE=M123R4;LINKAGE=E

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

NODE=M123R6
NODE=M123R6

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

NODE=M123

AMELIN 06 PAN 69 690 D.V. Amelin *et al.* (VES Collab.) REFID=51574
Translated from YAF 69 715.
SCHEGELSKY 06A EPJ A27 207 V.A. Schegelsky *et al.* REFID=51185
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AMELIN 00 NP A668 83 D. Amelin *et al.* (VES Collab.) REFID=47432
BAKER 99B PL B467 147 C.A. Baker *et al.* REFID=47398
BERTIN 98 PR D57 55 A. Bertin *et al.* (OBELIX Collab.) REFID=45782
BERTIN 97C PL B408 476 A. Bertin *et al.* (OBELIX Collab.) REFID=45701
ABELE 96C NP A609 562 A. Abele *et al.* (Crystal Barrel Collab.) REFID=45076
AMSLER 95B PL B342 433 C. Amsler *et al.* (Crystal Barrel Collab.) REFID=44377
AMSLER 95C PL B353 571 C. Amsler *et al.* (Crystal Barrel Collab.) REFID=44440
AMSLER 95D PL B355 425 C. Amsler *et al.* (Crystal Barrel Collab.) REFID=44441
BALOSHIN 95 PAN 58 46 O.N. Baloshin *et al.* (ITEP) REFID=44621
Translated from YAF 58 50.
AMSLER 94D PL B333 277 C. Amsler *et al.* (Crystal Barrel Collab.) REFID=44093
ANISOVICH 94 PL B323 233 V.V. Anisovich *et al.* (Crystal Barrel Collab.) REFID=43659
ANISOVICH 94B PR D50 1972 V.V. Anisovich *et al.* (LOQM) REFID=44071
ADAMO 93 NP A558 13C A. Adamo *et al.* (OBELIX Collab.) REFID=43657
ARMSTRONG 93C PL B307 394 T.A. Armstrong *et al.* (FNAL, FERR, GENO+) REFID=43587
ARMSTRONG 93D PL B307 399 T.A. Armstrong *et al.* (FNAL, FERR, GENO+) REFID=43596
WEIDENAUER 93 ZPHY C59 387 P. Weidenauer *et al.* (ASTERIX Collab.) REFID=43585
ADAMO 92 PL B287 368 A. Adamo *et al.* (OBELIX Collab.) REFID=42177
BELADIDZE 92B ZPHY C54 367 G.M. Beladidze *et al.* (VES Collab.) REFID=42172
AKER 91 PL B260 249 E. Aker *et al.* (Crystal Barrel Collab.) REFID=41587
MAY 90 ZPHY C46 203 B. May *et al.* (ASTERIX Collab.) REFID=41365
MAY 89 PL B225 450 B. May *et al.* (ASTERIX Collab.) IJP REFID=40921
BRIDGES 86B PRL 56 215 D.L. Bridges *et al.* (SYRA, CASE) REFID=21376
BRIDGES 86C PRL 57 1534 D.L. Bridges *et al.* (SYRA) REFID=21377

OTHER RELATED PAPERS

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ANISOVICH 05 JETPL 80 715 V.V. Anisovich REFID=50772
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