

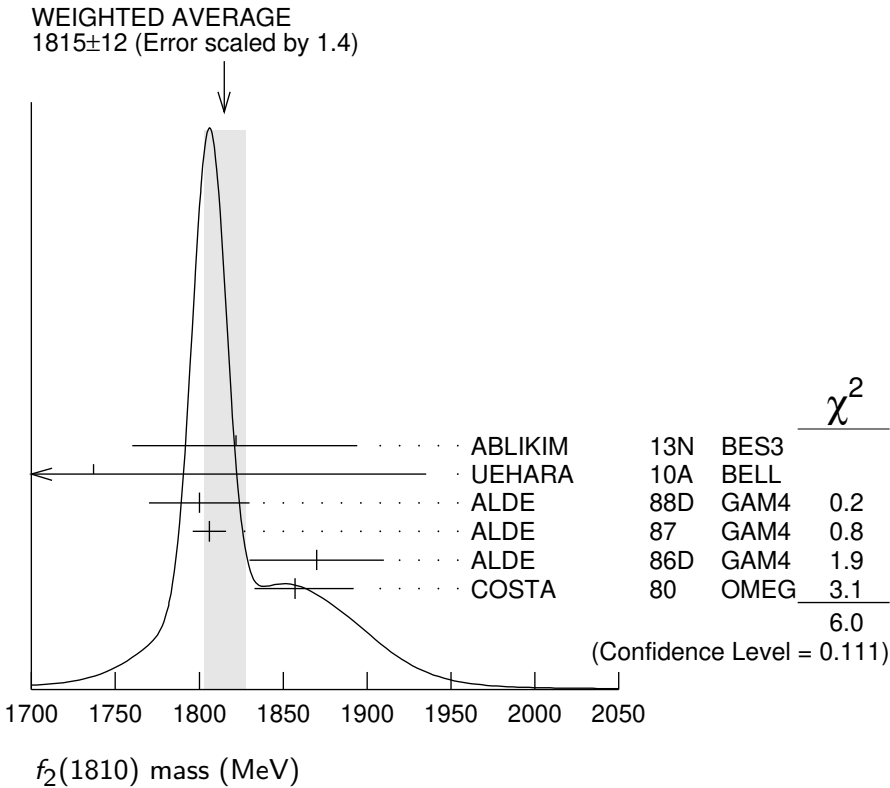
$f_2(1810)$

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

OMITTED FROM SUMMARY TABLE
Needs confirmation.

$f_2(1810)$ MASS

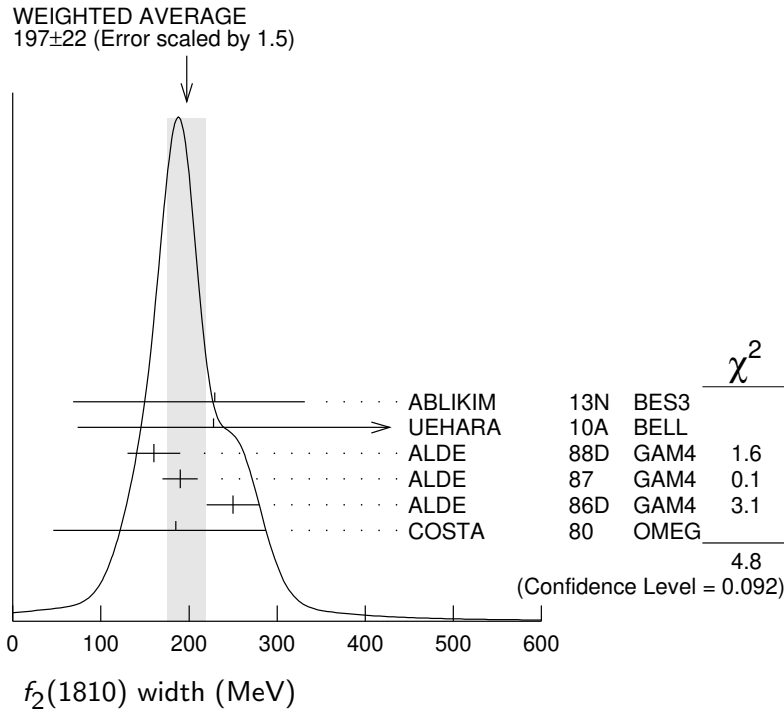
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1815 ±12 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.		
1822 ⁺²⁹ ₋₂₄ ⁺⁶⁶ ₋₅₇	5.5k	¹ ABLIKIM	13N BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\eta\eta$
1737 ± 9 ⁺¹⁹⁸ ₋₆₅		² UEHARA	10A BELL	$10.6 e^+e^- \rightarrow e^+e^-\eta\eta$
1800 ±30	40	ALDE	88D GAM4	$300 \pi^-p \rightarrow \pi^-p4\pi^0$
1806 ±10	1600	ALDE	87 GAM4	$100 \pi^-p \rightarrow 4\pi^0n$
1870 ±40		³ ALDE	86D GAM4	$100 \pi^-p \rightarrow \eta\eta n$
1857 ⁺³⁵ ₋₂₄		⁴ COSTA	80 OMEG	$10 \pi^-p \rightarrow K^+K^-n$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1845.0 ± 2.2 ⁺ _{1.6} _{7.2}		⁵ ALBRECHT	20 RVUE	$0.9 \bar{p}p \rightarrow \pi^0\pi^0\eta, \pi^0\eta\eta, \pi^0K^+K^-$
1858 ⁺¹⁸ ₋₇₁		⁶ LONGACRE	86 RVUE	Compilation
1799 ±15		⁷ CASON	82 STRC	$8 \pi^+p \rightarrow \Delta^{++}\pi^0\pi^0$



¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.
² Breit-Wigner mass. Could also be the $f_2(1910)$.
³ Seen in only one solution.
⁴ Error increased by spread of two solutions. Included in LONGACRE 86 global analysis.
⁵ T-matrix pole, 4 poles, 4 channels, including scattering data from HYAMS 75 ($\pi\pi$), LONGACRE 86 ($K\bar{K}$), BINON 83 ($\eta\eta$).
⁶ From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.
⁷ From an amplitude analysis of the reaction $\pi^+\pi^-\rightarrow 2\pi^0$. The resonance in the $2\pi^0$ final state is not confirmed by PROKOSHKIN 97.

$f_2(1810)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
197 ± 22	OUR AVERAGE	Error includes scale factor of 1.5. See the ideogram below.		
229 ⁺⁵² ₋₄₂	⁺⁸⁸ ₋₁₅₅	5.5k	1 ABLIKIM	13N BES3 $e^+e^-\rightarrow J/\psi\rightarrow \gamma\eta\eta$
228 ⁺²¹ ₋₂₀	⁺²³⁴ ₋₁₅₃		2 UEHARA	10A BELL $10.6\,e^+e^-\rightarrow e^+e^-\eta\eta$
160 ± 30	40	ALDE	88D GAM4	300 $\pi^-p\rightarrow \pi^-p4\pi^0$
190 ± 20	1600	ALDE	87 GAM4	100 $\pi^-p\rightarrow 4\pi^0n$
250 ± 30		3 ALDE	86D GAM4	100 $\pi^-p\rightarrow \eta\eta n$
185 ⁺¹⁰² ₋₁₃₉		4 COSTA	80 OMEG	10 $\pi^-p\rightarrow K^+K^-n$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
260.9± 3.9	^{+199.9} _{-38.2}		5 ALBRECHT	20 RVUE $0.9\,\bar{p}p\rightarrow \pi^0\pi^0\eta, \pi^0\eta\eta, \pi^0K^+K^-$
388 ⁺¹⁵ ₋₂₁		6 LONGACRE	86 RVUE	Compilation
280 ⁺⁴² ₋₃₅		7 CASON	82 STRC	8 $\pi^+p\rightarrow \Delta^{++}\pi^0\pi^0$



¹ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.
² Breit-Wigner width. Could also be the $f_2(1910)$.
³ Seen in only one solution.
⁴ Error increased by spread of two solutions. Included in LONGACRE 86 global analysis.
⁵ T-matrix pole, 4 poles, 4 channels, including scattering data from HYAMS 75 ($\pi\pi$), LONGACRE 86 ($K\bar{K}$), BINON 83 ($\eta\eta$).
⁶ From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.
⁷ From an amplitude analysis of the reaction $\pi^+\pi^-\rightarrow 2\pi^0$. The resonance in the $2\pi^0$ final state is not confirmed by PROKOSHKIN 97.

$f_2(1810)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $\pi\pi$	seen
Γ_2 $\eta\eta$	seen
Γ_3 $4\pi^0$	seen
Γ_4 K^+K^-	seen
Γ_5 $\gamma\gamma$	seen

$f_2(1810)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$				$\Gamma_2\Gamma_5/\Gamma$
VALUE (eV)	DOCUMENT ID	TECN	COMMENT	
$5.2^{+0.9+37.3}_{-0.8-4.5}$	¹ UEHARA	10A	BELL	$10.6\ e^+e^-\rightarrow e^+e^-\eta\eta$
¹ Including interference with the $f_2'(1525)$ (parameters fixed to the values from the 2008 edition of this review, PDG 08) and $f_2(1270)$. May also be the $f_0(1500)$.				

$f_2(1810)$ BRANCHING RATIOS

$\Gamma(\pi\pi)/\Gamma_{\text{total}}$				Γ_1/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	AMSLER	02	CBAR	$0.9\ \bar{p}p\rightarrow\pi^0\eta\eta,\pi^0\pi^0\pi^0$
not seen	PROKOSHKIN 97	GAM2	38	$\pi^-\bar{p}\rightarrow\pi^0\pi^0n$
$0.21^{+0.02}_{-0.03}$	¹ LONGACRE	86	RVUE	Compilation
0.44 ± 0.03	² CASON	82	STRC	$8\ \pi^+p\rightarrow\Delta^{++}\pi^0\pi^0$
¹ From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.				
² Included in LONGACRE 86 global analysis.				

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$				Γ_2/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
seen	ABLIKIM	13N	BES3	PWA of $J/\psi\rightarrow\gamma\eta\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.008^{+0.028}_{-0.003}$	¹ LONGACRE	86	RVUE	Compilation

¹From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

$\Gamma(\pi\pi)/\Gamma(4\pi^0)$				Γ_1/Γ_3
VALUE	DOCUMENT ID	TECN	COMMENT	

• • • We do not use the following data for averages, fits, limits, etc. • • •
<0.75 ALDE 87 GAM4 100 $\pi^- p \rightarrow 4\pi^0 n$

$\Gamma(4\pi^0)/\Gamma(\eta\eta)$				Γ_3/Γ_2
VALUE	DOCUMENT ID	TECN	COMMENT	

• • • We do not use the following data for averages, fits, limits, etc. • • •
 0.8 ± 0.3 ALDE 87 GAM4 100 $\pi^- p \rightarrow 4\pi^0 n$

$\Gamma(K^+K^-)/\Gamma_{\text{total}}$				Γ_4/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	

• • • We do not use the following data for averages, fits, limits, etc. • • •
 $0.003^{+0.019}_{-0.002}$ ¹ LONGACRE 86 RVUE Compilation
seen COSTA 80 OMEG 10 $\pi^- p \rightarrow K^+K^- n$

¹From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

$f_2(1810)$ REFERENCES

ALBRECHT	20	EPJ C80 453	M. Albrecht <i>et al.</i>	(Crystal Barrel Collab.)
ABLIKIM	13N	PR D87 092009	M. Ablikim <i>et al.</i>	(BESIII Collab.)
UEHARA	10A	PR D82 114031	S. Uehara <i>et al.</i>	(BELLE Collab.)
PDG	08	PL B667 1	C. Amsler <i>et al.</i>	(PDG Collab.)
AMSLER	02	EPJ C23 29	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
PROKOSHKIN	97	PD 42 117	Y.D. Prokoshkin <i>et al.</i>	(SERP)
		Translated from DANS 353 323.		
ALDE	88D	SJNP 47 810	D.M. Alde <i>et al.</i>	(SERP, BELG, LANL, LAPP+)
		Translated from YAF 47 1273.		
ALDE	87	PL B198 286	D.M. Alde <i>et al.</i>	(LANL, BRUX, SERP, LAPP)
ALDE	86D	NP B269 485	D.M. Alde <i>et al.</i>	(BELG, LAPP, SERP, CERN+)
LONGACRE	86	PL B177 223	R.S. Longacre <i>et al.</i>	(BNL, BRAN, CUNY+)
BINON	83	NC 78A 313	F.G. Binon <i>et al.</i>	(BELG, LAPP, SERP+)
CASON	82	PRL 48 1316	N.M. Cason <i>et al.</i>	(NDAM, ANL)
COSTA	80	NP B175 402	G. Costa <i>et al.</i>	(BARI, BONN, CERN, GLAS+)
HYAMS	75	NP B100 205	B.D. Hyams <i>et al.</i>	(CERN, MPIM)