$f_2(1810)$

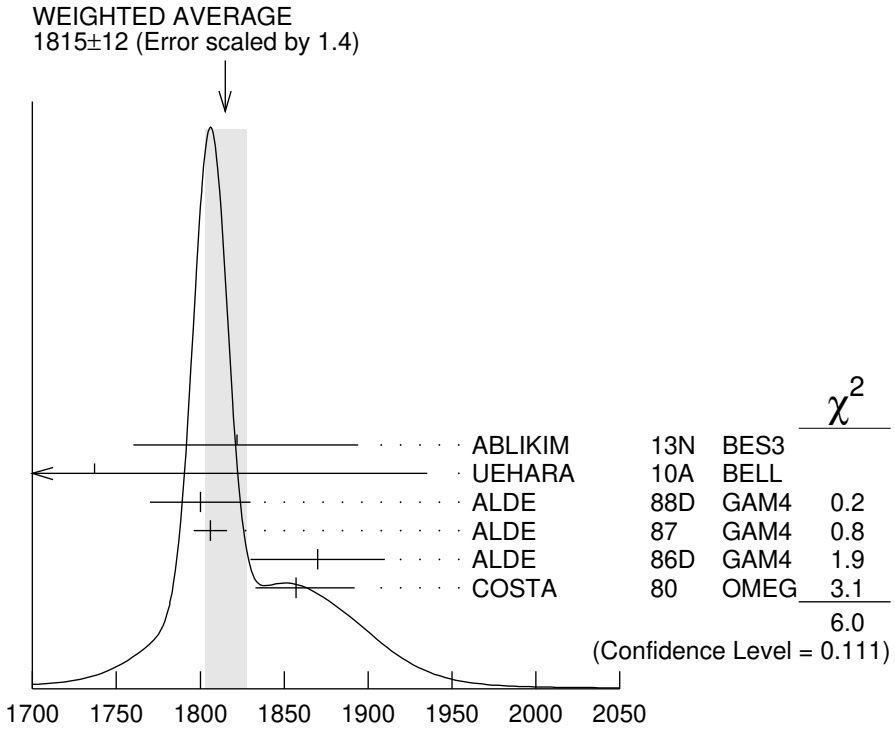
$I^G(J^{PC}) = 0^+(2^{++})$

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	$e^+e^- \to J/\psi \to \gamma\eta\eta$
$1737 \pm 9\ {}^{+198}_{-65}$		[2] UEHARA	10A	BELL	10.6 $e^+e^- \to e^+e^-\eta\eta$
1800 ±30	40	ALDE	88D	GAM4	300 $\pi^- p \to \pi^- p 4\pi^0$
1806 ±10	1600	ALDE	87	GAM4	100 $\pi^- p \to 4\pi^0 n$
1870 ±40		[3] ALDE	86D	GAM4	100 $\pi^- p \to \eta\eta n$
$1857\ {}^{+35}_{-24}$		[4] COSTA	80	OMEG	10 $\pi^- p \to K^+K^- n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1845.0 \pm 2.2^{+\ 1.6}_{-\ 7.2}$		[5] ALBRECHT	20	RVUE	0.9 $\overline{p}p \to \pi^0\pi^0\eta$, $\pi^0\eta\eta$, $\pi^0 K^+K^-$
$1858\ {}^{+18}_{-71}$		[6] LONGACRE	86	RVUE	Compilation
1799 ±15		[7] CASON	82	STRC	8 $\pi^+ p \to \Delta^{++}\pi^0\pi^0$

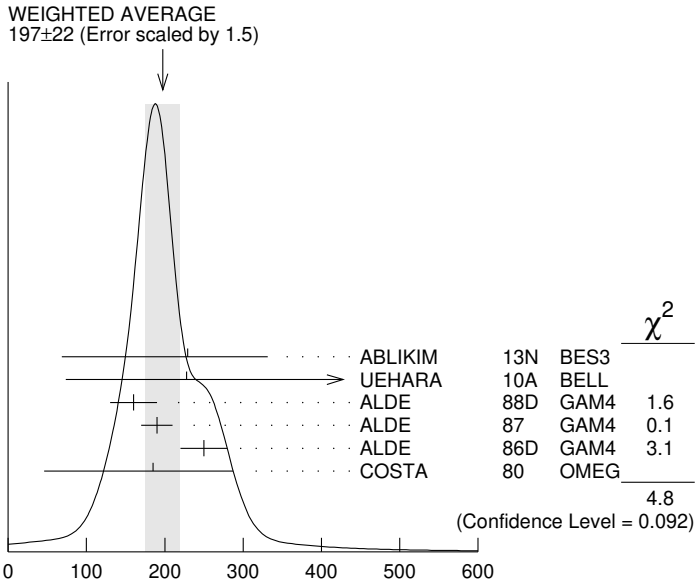


[1] From partial wave analysis including all possible combinations of 0^{++}, 2^{++}, and 4^{++} resonances.

[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 ($K\overline{K}$), 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 $\pi^+\pi^- \to 2\pi^0$. 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	$e^+e^- \to J/\psi \to \gamma\eta\eta$
$228\ ^{+\ 21}_{-\ 20}\ ^{+234}_{-153}$		[2] UEHARA	10A	BELL	10.6 $e^+e^- \to e^+e^-\eta\eta$
160 ± 30	40	ALDE	88D	GAM4	300 $\pi^- p \to \pi^- p 4\pi^0$
190 ± 20	1600	ALDE	87	GAM4	100 $\pi^- p \to 4\pi^0 n$
250 ± 30		[3] ALDE	86D	GAM4	100 $\pi^- p \to \eta\eta n$
$185\ ^{+102}_{-139}$		[4] COSTA	80	OMEG	10 $\pi^- p \to K^+K^- n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$260.9 \pm 3.9\ ^{+199.9}_{-\ 38.2}$		[5] ALBRECHT	20	RVUE	0.9 $\overline{p}p \to \pi^0\pi^0\eta$, $\pi^0\eta\eta$, $\pi^0 K^+K^-$
$388\ ^{+\ 15}_{-\ 21}$		[6] LONGACRE	86	RVUE	Compilation
$280\ ^{+\ 42}_{-\ 35}$		[7] CASON	82	STRC	8 $\pi^+ p \to \Delta^{++}\pi^0\pi^0$



[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 ($K\overline{K}$), 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 $\pi^+\pi^- \to 2\pi^0$. 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

$f_2(1810)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(total)$

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_2\Gamma_5/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
$\mathbf{5.2^{+0.9+37.3}_{-0.8-4.5}}$	[1] UEHARA	10A	BELL	10.6 $e^+e^- \to e^+e^-\eta\eta$

[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

$\Gamma(\pi\pi)/\Gamma_{total}$ 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 $\overline{p}p \to \pi^0\eta\eta$, $\pi^0\pi^0\pi^0$
not seen	PROKOSHKIN	97	GAM2	38 $\pi^- p \to \pi^0\pi^0 n$
$0.21^{+0.02}_{-0.03}$	[1] LONGACRE	86	RVUE	Compilation
0.44 ± 0.03	[2] CASON	82	STRC	8 $\pi^+ p \to \Delta^{++}\pi^0\pi^0$

[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.

$\Gamma(\eta\eta)/\Gamma_{total}$ Γ_2/Γ

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

[1] From 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 $\pi^- p \rightarrow K^+ K^- n$

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