

$f_2(1810)$

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

OMITTED FROM SUMMARY TABLE

Needs confirmation.

$f_2(1810)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1815 ± 12 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.		
1737 ± 9 ⁺¹⁹⁸ ₋₆₅		¹ UEHARA	10A BELL	10.6 e ⁺ e ⁻ → e ⁺ e ⁻ ηη
1800 ± 30	40	ALDE	88D GAM4	300 π ⁻ p → π ⁻ p4π ⁰
1806 ± 10	1600	ALDE	87 GAM4	100 π ⁻ p → 4π ⁰ n
1870 ± 40		² ALDE	86D GAM4	100 π ⁻ p → ηηn
1857 ⁺³⁵ ₋₂₄		³ COSTA...	80 OMEG	10 π ⁻ p → K ⁺ K ⁻ n

• • • We do not use the following data for averages, fits, limits, etc. • • •

1858 ⁺¹⁸ ₋₇₁		⁴ LONGACRE	86 RVUE	Compilation
1799 ± 15		⁵ CASON	82 STRC	8 π ⁺ p → Δ ⁺⁺ π ⁰ π ⁰

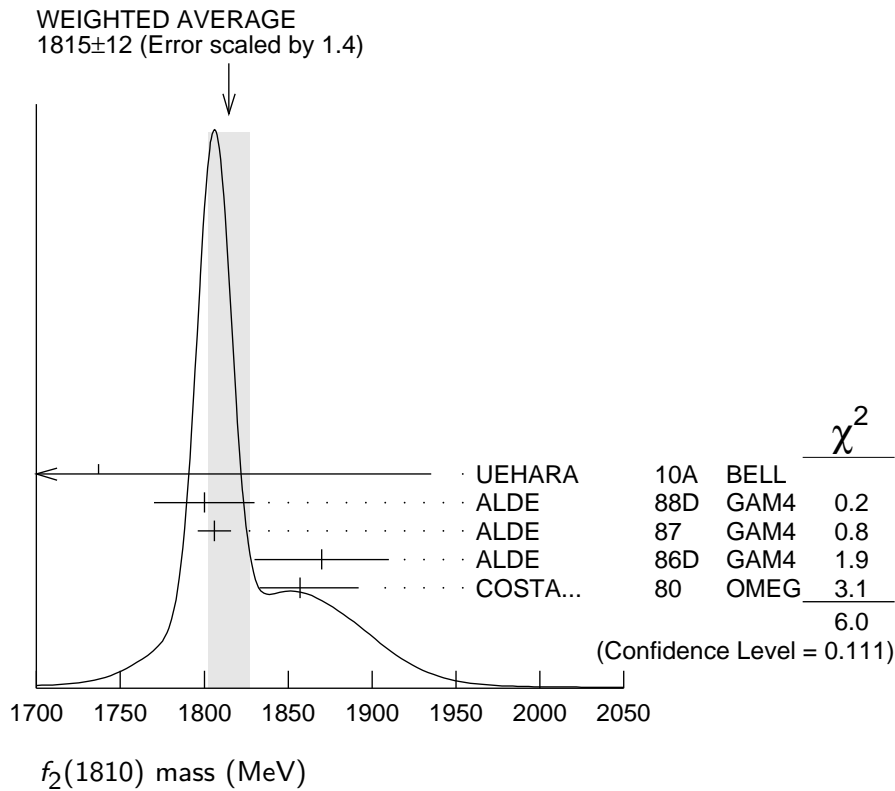
¹ Breit-Wigner mass.

² Seen in only one solution.

³ Error increased by spread of two solutions. Included in LONGACRE 86 global analysis.

⁴ From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

⁵ From an amplitude analysis of the reaction π⁺π⁻ → 2π⁰. The resonance in the 2π⁰ final state is not confirmed by PROKOSHKIN 97.



$f_2(1810)$ WIDTH

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
197± 22 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.		
228 ⁺ ₋ 21 ⁺ ₋ 234 20 ⁻ 153		⁶ 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		⁷ ALDE	86D GAM4	100 $\pi^-p \rightarrow \eta\eta n$
185 ⁺ ₋ 102 139		⁸ COSTA...	80 OMEG	10 $\pi^-p \rightarrow K^+K^-n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
388 ⁺ ₋ 15 21		⁹ LONGACRE	86 RVUE	Compilation
280 ⁺ ₋ 42 35		¹⁰ CASON	82 STRC	8 $\pi^+p \rightarrow \Delta^{++}\pi^0\pi^0$

⁶ Breit-Wigner width.

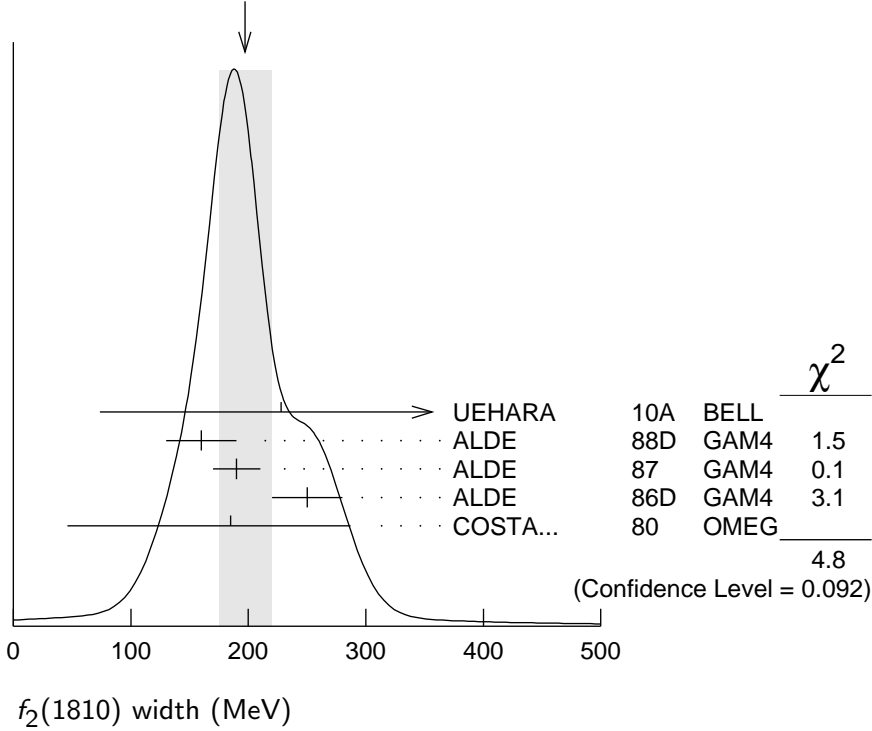
⁷ Seen in only one solution.

⁸ Error increased by spread of two solutions. Included in LONGACRE 86 global analysis.

⁹ From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

¹⁰ From an amplitude analysis of the reaction $\pi^+\pi^-\pi^-\pi^-\pi^0 \rightarrow 2\pi^0$. The resonance in the $2\pi^0$ final state is not confirmed by PROKOSHKIN 97.

WEIGHTED AVERAGE
 197 ± 22 (Error scaled by 1.5)



$f_2(1810)$ DECAY MODES

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

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

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	COMMENT	$\Gamma_2\Gamma_5/\Gamma$
$5.2^{+0.9+37.3}_{-0.8-4.5}$	¹¹ UEHARA	10A	BELL	$10.6 e^+e^- \rightarrow e^+e^-\eta\eta$

¹¹ 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

$\Gamma(\pi\pi)/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	COMMENT	Γ_1/Γ
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• • • 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	$\pi^- p \rightarrow \pi^0 \pi^0 n$
$0.21^{+0.02}_{-0.03}$	¹² LONGACRE	86	RVUE	Compilation	
0.44 ± 0.03	¹³ CASON	82	STRC	8	$\pi^+ p \rightarrow \Delta^{++} \pi^0 \pi^0$

¹² From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

¹³ Included in LONGACRE 86 global analysis.

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$				Γ_2/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.008^{+0.028}_{-0.003}$	¹⁴ LONGACRE	86	RVUE	Compilation
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¹⁴ 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 $\pi^- p \rightarrow 4\pi^0 n$
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$\Gamma(4\pi^0)/\Gamma(\eta\eta)$				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 $\pi^- p \rightarrow 4\pi^0 n$
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$\Gamma(K^+ K^-)/\Gamma_{\text{total}}$				Γ_4/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.003^{+0.019}_{-0.002}$	¹⁵ LONGACRE	86	RVUE	Compilation
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seen	COSTA...	80	OMEG	10 $\pi^- p \rightarrow K^+ K^- n$
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¹⁵ 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

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>	
PROKOSHKIN	97	SPD 42 117	Y.D. Prokoshkin <i>et al.</i>	(SERP)
ALDE	88D	SJNP 47 810	D.M. Alde <i>et al.</i>	(SERP, BELG, LANL, LAPP+)
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+)
CASON	82	PRL 48 1316	N.M. Cason <i>et al.</i>	(NDAM, ANL)
COSTA...	80	NP B175 402	G. Costa de Beaugard <i>et al.</i>	(BARI, BONN+)