

# $f_2(1810)$

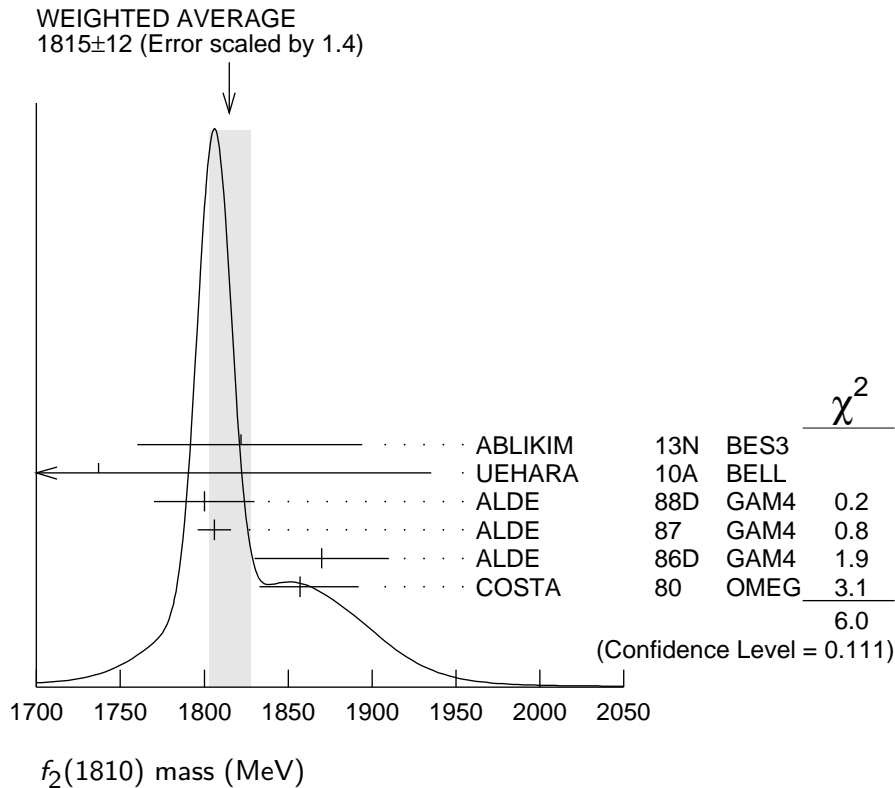
$$I^G(J^{PC}) = 0^+(2^{++})$$

OMITTED FROM SUMMARY TABLE

Needs confirmation.

## $f_2(1810)$ MASS

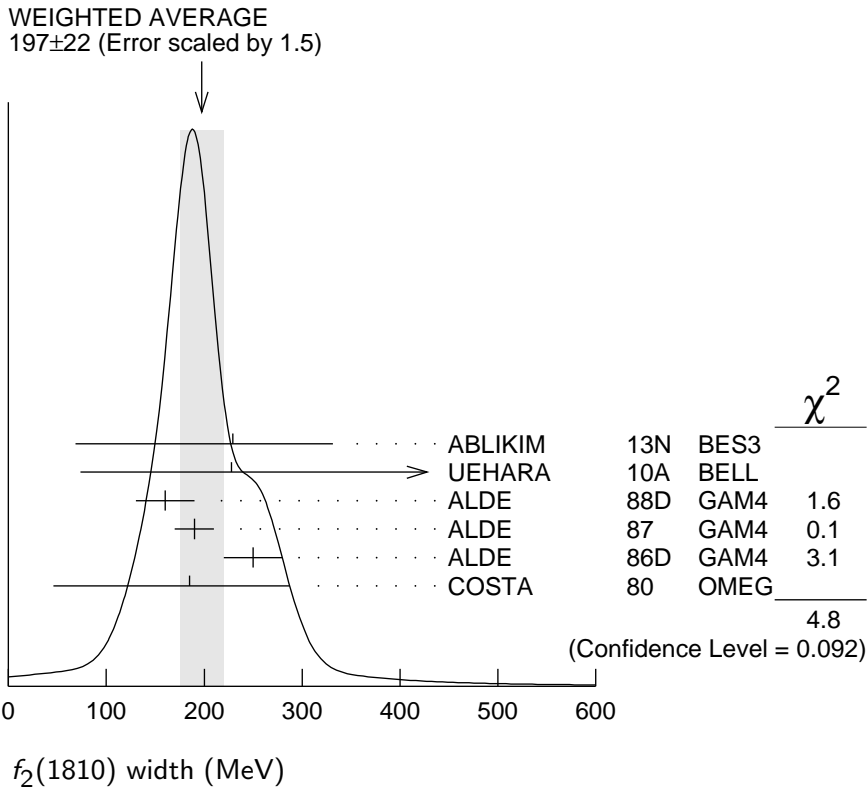
<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>1815 ± 12 OUR AVERAGE</b>				
Error includes scale factor of 1.4. See the ideogram below.				
1822 <sup>+29</sup> <sub>-24</sub> + <sup>66</sup> <sub>-57</sub>	5.5k	<sup>1</sup> ABLIKIM	13N BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\eta\eta$
1737 ± 9 <sup>+198</sup> <sub>-65</sub>		<sup>2</sup> 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		<sup>3</sup> ALDE	86D GAM4	100 $\pi^-p \rightarrow \eta\eta n$
1857 <sup>+35</sup> <sub>-24</sub>		<sup>4</sup> COSTA	80 OMEG	10 $\pi^-p \rightarrow K^+K^-n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1858 <sup>+18</sup> <sub>-71</sub>		<sup>5</sup> LONGACRE	86 RVUE	Compilation
1799 ± 15		<sup>6</sup> CASON	82 STRC	8 $\pi^+p \rightarrow \Delta^{++}\pi^0\pi^0$



- <sup>1</sup> From partial wave analysis including all possible combinations of  $0^{++}$ ,  $2^{++}$ , and  $4^{++}$  resonances.
- <sup>2</sup> Breit-Wigner mass.
- <sup>3</sup> Seen in only one solution.
- <sup>4</sup> Error increased by spread of two solutions. Included in LONGACRE 86 global analysis.
- <sup>5</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.
- <sup>6</sup> 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

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>197<math>\pm</math> 22 OUR AVERAGE</b>		Error includes scale factor of 1.5.		See the ideogram below.
229 $^{+52}_{-42}$ 88 155	5.5k	<sup>7</sup> ABLIKIM	13N BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma\eta\eta$
228 $^{+21}_{-20}$ 234 153		<sup>8</sup> UEHARA	10A BELL	10.6 $e^+e^- \rightarrow e^+e^-\eta\eta$
160 $\pm$ 30	40	ALDE	88D GAM4	300 $\pi^-p \rightarrow \pi^-p4\pi^0$
190 $\pm$ 20	1600	ALDE	87 GAM4	100 $\pi^-p \rightarrow 4\pi^0n$
250 $\pm$ 30		<sup>9</sup> ALDE	86D GAM4	100 $\pi^-p \rightarrow \eta\eta n$
185 $^{+102}_{-139}$		<sup>10</sup> COSTA	80 OMEG	10 $\pi^-p \rightarrow K^+K^-n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
388 $^{+15}_{-21}$		<sup>11</sup> LONGACRE	86 RVUE	Compilation
280 $^{+42}_{-35}$		<sup>12</sup> CASON	82 STRC	8 $\pi^+p \rightarrow \Delta^{++}\pi^0\pi^0$



- <sup>7</sup> From partial wave analysis including all possible combinations of  $0^{++}$ ,  $2^{++}$ , and  $4^{++}$  resonances.  
<sup>8</sup> Breit-Wigner width.  
<sup>9</sup> Seen in only one solution.  
<sup>10</sup> Error increased by spread of two solutions. Included in LONGACRE 86 global analysis.  
<sup>11</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.  
<sup>12</sup> 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 ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $\pi\pi$	
$\Gamma_2$ $\eta\eta$	seen
$\Gamma_3$ $4\pi^0$	seen
$\Gamma_4$ $K^+K^-$	
$\Gamma_5$ $\gamma\gamma$	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	
$5.2^{+0.9+37.3}_{-0.8-4.5}$	<sup>13</sup> UEHARA	10A BELL	10.6 $e^+e^-\rightarrow e^+e^-\eta\eta$	

<sup>13</sup> 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

$\Gamma(\pi\pi)/\Gamma_{\text{total}}$					$\Gamma_1/\Gamma$
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	$\pi^-p \rightarrow \pi^0\pi^0n$	
$0.21^{+0.02}_{-0.03}$	<sup>14</sup> LONGACRE	86	RVUE	Compilation	
$0.44 \pm 0.03$	<sup>15</sup> CASON	82	STRC	$8\pi^+p \rightarrow \Delta^{++}\pi^0\pi^0$	

<sup>14</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

<sup>15</sup> Included in LONGACRE 86 global analysis.

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$					$\Gamma_2/\Gamma$
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. • • •				
$0.008^{+0.028}_{-0.003}$	<sup>16</sup> LONGACRE	86	RVUE	Compilation	

<sup>16</sup> From a partial-wave analysis of data using a K-matrix formalism with 5 poles. Includes compilation of several other experiments.

$\Gamma(\pi\pi)/\Gamma(4\pi^0)$					$\Gamma_1/\Gamma_3$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
<0.75	ALDE	87	GAM4	100 $\pi^- p \rightarrow 4\pi^0 n$	

$\Gamma(4\pi^0)/\Gamma(\eta\eta)$					$\Gamma_3/\Gamma_2$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
$0.8 \pm 0.3$	ALDE	87	GAM4	100 $\pi^- p \rightarrow 4\pi^0 n$	

$\Gamma(K^+K^-)/\Gamma_{\text{total}}$					$\Gamma_4/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
$0.003^{+0.019}_{-0.002}$	<sup>17</sup> LONGACRE	86	RVUE	Compilation	
seen	COSTA	80	OMEG	$10 \pi^- p \rightarrow K^+ K^- n$	
<sup>17</sup> 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

ABLIKIM	13N	PR D87 092009	Ablikim M. <i>et al.</i>	(BES III 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>	
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+)
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+)