

**$\eta(1760)$** 

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

## OMITTED FROM SUMMARY TABLE

Seen by DM2 in the  $\rho\rho$  system (BISELLO 89B). Structure in this region has been reported before in the same system (BALTRUSAITIS 86B) and in the  $\omega\omega$  system (BALTRUSAITIS 85C, BISELLO 87).

 **$\eta(1760)$  MASS**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>1751 ± 15 OUR AVERAGE</b>				
1768 <sup>+24</sup> <sub>-25</sub> ± 10	465	<sup>1</sup> ZHANG	12A BELL	$e^+e^- \rightarrow e^+e^-\eta'\pi^+\pi^-$
1744 ± 10 ± 15	1045	<sup>2</sup> ABLIKIM	06H BES	$J/\psi \rightarrow \gamma\omega\omega$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1703 <sup>+12</sup> <sub>-11</sub> ± 2		<sup>3</sup> ZHANG	12A BELL	$e^+e^- \rightarrow e^+e^-\eta'\pi^+\pi^-$
1760 ± 11	320	<sup>4</sup> BISELLO	89B DM2	$J/\psi \rightarrow 4\pi\gamma$
<sup>1</sup> From a single-resonance fit.				
<sup>2</sup> From a partial wave analysis including $\eta(1760)$ , $f_0(1710)$ , $f_2(1640)$ , and $f_2(1910)$ .				
<sup>3</sup> From a two-resonance fit.				
<sup>4</sup> Estimated by us from various fits. Systematic uncertainties not estimated.				

 **$\eta(1760)$  WIDTH**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>240 ± 30 OUR AVERAGE</b>				
224 <sup>+62</sup> <sub>-56</sub> ± 25	465	<sup>5</sup> ZHANG	12A BELL	$e^+e^- \rightarrow e^+e^-\eta'\pi^+\pi^-$
244 <sup>+24</sup> <sub>-21</sub> ± 25	1045	<sup>6</sup> ABLIKIM	06H BES	$J/\psi \rightarrow \gamma\omega\omega$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
42 <sup>+36</sup> <sub>-22</sub> ± 15		<sup>7</sup> ZHANG	12A BELL	$e^+e^- \rightarrow e^+e^-\eta'\pi^+\pi^-$
60 ± 16	320	<sup>8</sup> BISELLO	89B DM2	$J/\psi \rightarrow 4\pi\gamma$
<sup>5</sup> From a single-resonance fit.				
<sup>6</sup> From a partial wave analysis including $\eta(1760)$ , $f_0(1710)$ , $f_2(1640)$ , and $f_2(1910)$ .				
<sup>7</sup> From a two-resonance fit.				
<sup>8</sup> Estimated by us from various fits. Systematic uncertainties not estimated.				

## $\eta(1760)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $4\pi$	
$\Gamma_2$ $2\pi^+ 2\pi^-$	seen
$\Gamma_3$ $\pi^+ \pi^- 2\pi^0$	seen
$\Gamma_4$ $\rho^0 \rho^0$	seen
$\Gamma_5$ $\rho^+ \rho^-$	seen
$\Gamma_6$ $2(\pi^+ \pi^- \pi^0)$	
$\Gamma_7$ $\omega\omega$	seen
$\Gamma_8$ $\eta' \pi^+ \pi^-$	seen
$\Gamma_9$ $\gamma\gamma$	seen

### $\eta(1760) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\eta' \pi^+ \pi^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$   $\Gamma_8\Gamma_9/\Gamma$

<u>VALUE (eV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>28.2_{-7.5}^{+7.9} \pm 3.7</math></b>	465	<sup>9</sup> ZHANG	12A BELL	$e^+ e^- \rightarrow e^+ e^- \eta' \pi^+ \pi^-$
$3.0_{-1.2}^{+2.0} \pm 0.8$	52	<sup>10</sup> ZHANG	12A BELL	$e^+ e^- \rightarrow e^+ e^- \eta' \pi^+ \pi^-$
$18_{-10}^{+13} \pm 5$	315	<sup>11</sup> ZHANG	12A BELL	$e^+ e^- \rightarrow e^+ e^- \eta' \pi^+ \pi^-$

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

<sup>9</sup> From a single-resonance fit.

<sup>10</sup> From a two-resonance fit. For constructive interference with the  $X(1835)$ .

<sup>11</sup> From a two-resonance fit. For destructive interference with the  $X(1835)$ .

### $\eta(1760)$ BRANCHING RATIOS

$\Gamma(2\pi^+ 2\pi^-)/\Gamma_{\text{total}}$	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$\Gamma_2/\Gamma$
<b>seen</b>	BISELLO	89B DM2	$J/\psi \rightarrow \gamma 2\pi^+ 2\pi^-$	

$\Gamma(\pi^+ \pi^- 2\pi^0)/\Gamma_{\text{total}}$	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$\Gamma_3/\Gamma$
<b>seen</b>	BISELLO	89B DM2	$J/\psi \rightarrow \gamma \pi^+ \pi^- 2\pi^0$	

$\Gamma(\rho^0 \rho^0)/\Gamma_{\text{total}}$	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$\Gamma_4/\Gamma$
<b>seen</b>	BISELLO	89B DM2	$J/\psi \rightarrow \gamma \rho^0 \rho^0$	
<b>seen</b>	BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \gamma \rho^0 \rho^0$	

$\Gamma(\rho^+ \rho^-)/\Gamma_{\text{total}}$	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$\Gamma_5/\Gamma$
<b>seen</b>	BISELLO	89B DM2	$J/\psi \rightarrow \gamma \rho^+ \rho^-$	
<b>seen</b>	BALTRUSAIT..86	MRK3	$J/\psi \rightarrow \gamma \rho^+ \rho^-$	

$\Gamma(\omega\omega)/\Gamma_{\text{total}}$

$\Gamma_7/\Gamma$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>seen</b>	BISELLO 87	DM2	$J/\psi \rightarrow \omega\omega$
<b>seen</b>	BALTRUSAIT..85C	MRK3	$J/\psi \rightarrow \gamma\omega\omega$

### $\eta(1760)$ REFERENCES

ZHANG 12A	PR D86 052002	C.C. Zhang <i>et al.</i>	(BELLE Collab.)
ABLIKIM 06H	PR D73 112007	M. Ablikim <i>et al.</i>	(BES Collab.)
BISELLO 89B	PR D39 701	G. Busetto <i>et al.</i>	(DM2 Collab.)
BISELLO 87	PL B192 239	D. Bisello <i>et al.</i>	(PADO, CLER, FRAS+)
BALTRUSAIT... 86	PR D33 629	R.M. Baltrusaitis <i>et al.</i>	(Mark III Collab.)
BALTRUSAIT... 86B	PR D33 1222	R.M. Baltrusaitis <i>et al.</i>	(Mark III Collab.)
BALTRUSAIT... 85C	PRL 55 1723	R.M. Baltrusaitis <i>et al.</i>	(CIT, UCSC+)