

$\omega(2220)$ 

$$I^G(J^{PC}) = 0^-(1^{--})$$

OMITTED FROM SUMMARY TABLE

 $\omega(2220)$  MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>2188±21 OUR AVERAGE</b>	Error includes scale factor of 1.2.		
2153±30±31	<sup>1</sup> ABLIKIM	24AJ BES3	$e^+e^- \rightarrow \omega\eta'$
2232±19±27	<sup>2</sup> ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi\pi$
2176±24±3	<sup>3</sup> ABLIKIM	21A BES3	$e^+e^- \rightarrow \omega\eta$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
2250±25±27	<sup>4</sup> ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi^+\pi^-$
2222±7±2	<sup>5</sup> ABLIKIM	22I BES3	2.0–3.8 $e^+e^- \rightarrow \omega\pi^0\pi^0$
2205±30	<sup>6</sup> ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$
<sup>1</sup> From a fit to the $e^+e^-$ cross section between 2.00 and 3.08 GeV with a sum of Breit-Wigner amplitude and a non-resonant contribution.			
<sup>2</sup> From a fit to $\omega\pi^+\pi^-$ and $\omega\pi^0\pi^0$ with a Breit-Wigner resonance interfering with the continuum. Supersedes ABLIKIM 22I.			
<sup>3</sup> From a fit to the cross section between 2.00 and 3.08 GeV with a coherent sum of Breit-Wigner amplitudes, including contributions from $\omega(1420)$ and $\omega(1650)/\phi(1680)$ .			
<sup>4</sup> From a fit to $\omega\pi^+\pi^-$ with a Breit-Wigner resonance interfering with the continuum.			
<sup>5</sup> From the fit to the cross section by the coherent sum of resonant component parametrized by a modified Breit-Wigner amplitude and a phase-space contribution for the continuum.			
<sup>6</sup> From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.			

 $\omega(2220)$  WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>105±34 OUR AVERAGE</b>			
167±77±7	<sup>1</sup> ABLIKIM	24AJ BES3	$e^+e^- \rightarrow \omega\eta'$
93±53±20	<sup>2</sup> ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi\pi$
89±50±5	<sup>3</sup> ABLIKIM	21A BES3	$e^+e^- \rightarrow \omega\eta$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
125±43±15	<sup>4</sup> ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi^+\pi^-$
59±30±6	<sup>5</sup> ABLIKIM	22I BES3	2.0–3.8 $e^+e^- \rightarrow \omega\pi^0\pi^0$
350±90	<sup>6</sup> ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$
<sup>1</sup> From a fit to the $e^+e^-$ cross section between 2.00 and 3.08 GeV with a sum of Breit-Wigner amplitude and a non-resonant contribution.			
<sup>2</sup> From a fit to $\omega\pi^+\pi^-$ and $\omega\pi^0\pi^0$ with a Breit-Wigner resonance interfering with the continuum. Supersedes ABLIKIM 22I.			
<sup>3</sup> From a fit to the cross section between 2.00 and 3.08 GeV with a coherent sum of Breit-Wigner amplitudes, including contributions from $\omega(1420)$ and $\omega(1650)/\phi(1680)$ .			
<sup>4</sup> From a fit to $\omega\pi^+\pi^-$ with a Breit-Wigner resonance interfering with the continuum.			
<sup>5</sup> From the fit to the cross section by the coherent sum of resonant component parametrized by a modified Breit-Wigner amplitude and a phase-space contribution for the continuum.			
<sup>6</sup> From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.			

**$\omega(2220)$  DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $\omega\pi\pi$	seen
$\Gamma_2$ $\omega\pi^+\pi^-$	seen
$\Gamma_3$ $\omega\pi^0\pi^0$	seen
$\Gamma_4$ $\omega\eta$	seen
$\Gamma_5$ $\omega\eta'$	seen
$\Gamma_6$ $e^+e^-$	seen

 **$\omega(2220) \Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$** 

$$\Gamma(\omega\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_3\Gamma_6/\Gamma$$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.3 \pm 0.1 \pm 0.1$	<sup>1</sup> ABLIKIM	22I	BES3	$2.0\text{--}3.8 e^+e^- \rightarrow \omega\pi^0\pi^0$
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<sup>1</sup> Superseded by ABLIKIM 23G.

$$\Gamma(\omega\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_2\Gamma_6/\Gamma$$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.9 \pm 0.4 \pm 0.4$	<sup>1</sup> ABLIKIM	23G	BES3	$2.0\text{--}3.1 e^+e^- \rightarrow \omega\pi^+\pi^-$
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<sup>1</sup> From a fit to  $\omega\pi^+\pi^-$  with a Breit-Wigner resonance interfering with the continuum. Solution with constructive interference:  $52.9 \pm 17.0 \pm 13.1$  eV.

$$\Gamma(\omega\pi\pi) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_1\Gamma_6/\Gamma$$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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<b><math>0.9 \pm 0.5 \pm 0.2</math></b>	<sup>1</sup> ABLIKIM	23G	BES3	$2.0\text{--}3.1 e^+e^- \rightarrow \omega\pi\pi$
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<sup>1</sup> From a fit to  $\omega\pi^+\pi^-$  and  $\omega\pi^0\pi^0$  with a Breit-Wigner resonance interfering with the continuum. Solution with constructive interference:  $61.1 \pm 32.1 \pm 15.4$  eV. Supersedes ABLIKIM 22I.

$$\Gamma(\omega\eta) \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_4\Gamma_6/\Gamma$$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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<b><math>0.43 \pm 0.15 \pm 0.04</math></b>	<sup>1</sup> ABLIKIM	21A	BES3	$e^+e^- \rightarrow \omega\eta$
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<sup>1</sup> For constructive interference with  $\omega(1420)$  and  $\omega(1650)/\phi(1680)$ . For destructive interference:  $1.25 \pm 0.48 \pm 0.18$  eV.

$$\Gamma(\omega\eta') \times \Gamma(e^+e^-)/\Gamma_{\text{total}} \qquad \Gamma_5\Gamma_6/\Gamma$$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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**$4.2 \pm 1.5$  OUR AVERAGE**

$5.72 \pm 1.68 \pm 1.5$	<sup>1</sup> ABLIKIM	24AJ	BES3	$e^+e^- \rightarrow \omega\eta'$
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$2.99 \pm 1.68 \pm 1.2$	<sup>2</sup> ABLIKIM	24AJ	BES3	$e^+e^- \rightarrow \omega\eta'$
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<sup>1</sup> Solution 1 of the two solutions.

<sup>2</sup> Solution 2 of the two solutions.

## $\omega(2220)$ REFERENCES

ABLIKIM	24AJ	JHEP 2407 093	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM	23G	JHEP 2301 111	M. Ablikim <i>et al.</i>	(BESIII Collab.)
Also		JHEP 2303 093 (errat.)	M. Ablikim, <i>et. al.</i>	(BESIII Collab.)
ABLIKIM	22I	PR D105 032005	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM	21A	PL B813 136059	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ANISOVICH	02B	PL B542 19	A.V. Anisovich <i>et al.</i>	
ANISOVICH	01C	PL B507 23	A.V. Anisovich <i>et al.</i>	
ANISOVICH	00D	PL B476 15	A.V. Anisovich <i>et al.</i>	

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