

$\omega(2220)$

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

OMITTED FROM SUMMARY TABLE

$\omega(2220)$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2188±21 OUR AVERAGE	Error includes scale factor of 1.2.		
2153±30±31	¹ ABLIKIM	24AJ BES3	$e^+e^- \rightarrow \omega\eta'$
2232±19±27	² ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi\pi$
2176±24±3	³ ABLIKIM	21A BES3	$e^+e^- \rightarrow \omega\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
2250±25±27	⁴ ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi^+\pi^-$
2222±7±2	⁵ ABLIKIM	22I BES3	2.0–3.8 $e^+e^- \rightarrow \omega\pi^0\pi^0$
2205±30	⁶ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$
¹ 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.			
² 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.			
³ 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 $\omega(1650)/\phi(1680)$.			
⁴ From a fit to $\omega\pi^+\pi^-$ with a Breit-Wigner resonance interfering with the continuum.			
⁵ 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.			
⁶ From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.			

$\omega(2220)$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
105±34 OUR AVERAGE			
167±77±7	¹ ABLIKIM	24AJ BES3	$e^+e^- \rightarrow \omega\eta'$
93±53±20	² ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi\pi$
89±50±5	³ ABLIKIM	21A BES3	$e^+e^- \rightarrow \omega\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
125±43±15	⁴ ABLIKIM	23G BES3	2.0–3.1 $e^+e^- \rightarrow \omega\pi^+\pi^-$
59±30±6	⁵ ABLIKIM	22I BES3	2.0–3.8 $e^+e^- \rightarrow \omega\pi^0\pi^0$
350±90	⁶ ANISOVICH	02B SPEC	0.6–1.9 $p\bar{p} \rightarrow \omega\eta, \omega\pi^0\pi^0$
¹ 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.			
² 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.			
³ 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 $\omega(1650)/\phi(1680)$.			
⁴ From a fit to $\omega\pi^+\pi^-$ with a Breit-Wigner resonance interfering with the continuum.			
⁵ 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.			
⁶ From the combined analysis of ANISOVICH 00D, ANISOVICH 01C, and ANISOVICH 02B.			

$\omega(2220)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\omega\pi\pi$	seen
Γ_2	$\omega\pi^+\pi^-$	seen
Γ_3	$\omega\pi^0\pi^0$	seen
Γ_4	$\omega\eta$	seen
Γ_5	$\omega\eta'$	seen
Γ_6	e^+e^-	seen

 $\omega(2220) \Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$ $\Gamma(\omega\pi^0\pi^0) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_3\Gamma_6/\Gamma$

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

$0.3 \pm 0.1 \pm 0.1$ ¹ ABLIKIM 22I BES3 2.0–3.8 $e^+e^- \rightarrow \omega\pi^0\pi^0$

¹ Superseded by ABLIKIM 23G.

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

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

$0.9 \pm 0.4 \pm 0.4$ ¹ ABLIKIM 23G BES3 2.0–3.1 $e^+e^- \rightarrow \omega\pi^+\pi^-$

¹ 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.

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

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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$0.9 \pm 0.5 \pm 0.2$ ¹ ABLIKIM 23G BES3 2.0–3.1 $e^+e^- \rightarrow \omega\pi\pi$

¹ 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.

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

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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$0.43 \pm 0.15 \pm 0.04$ ¹ ABLIKIM 21A BES3 $e^+e^- \rightarrow \omega\eta$

¹ For constructive interference with $\omega(1420)$ and $\omega(1650)/\phi(1680)$. For destructive interference: $1.25 \pm 0.48 \pm 0.18$ eV.

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

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
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4.2 ± 1.5 OUR AVERAGE

$5.72 \pm 1.68 \pm 1.5$ ¹ ABLIKIM 24AJ BES3 $e^+e^- \rightarrow \omega\eta'$

$2.99 \pm 1.68 \pm 1.2$ ² ABLIKIM 24AJ BES3 $e^+e^- \rightarrow \omega\eta'$

¹ Solution 1 of the two solutions.

² 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>	
