$\omega(1650)$

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

$\omega(1650)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1670± 30 OUR ESTIMATE						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1660± 10± 2		AUBERT,B	04N	BABR		10.6 $e^+e^- \rightarrow \pi^+\pi^-\pi^0\gamma$
1770± 50±60	1.2M	[1] ACHASOV	03D	RVUE		0.44–2.00 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$
1619± 5		[2] HENNER	02	RVUE		1.2–2.0 $e^+e^- \rightarrow \rho\pi$, $\omega\pi\pi$
1700± 20		EUGENIO	01	SPEC		18 $\pi^- p \rightarrow \omega\eta n$
1705± 26	612	[3] AKHMETSHIN	00D	CMD2		$e^+e^- \rightarrow \omega\pi^+\pi^-$
1820^{+190}_{-150}		[4] ACHASOV	98H	RVUE		$e^+e^- \rightarrow \pi^+\pi^-\pi^0$
1840^{+100}_{-70}		[5] ACHASOV	98H	RVUE		$e^+e^- \rightarrow \omega\pi^+\pi^-$
1780^{+170}_{-300}		[6] ACHASOV	98H	RVUE		$e^+e^- \rightarrow K^+K^-$
$\sim$ 2100		[7] ACHASOV	98H	RVUE		$e^+e^- \rightarrow K^0_S K^\pm \pi^\mp$
1606± 9		[8] CLEGG	94	RVUE		
1662± 13	750	[9] ANTONELLI	92	DM2		1.34–2.4$e^+e^- \rightarrow \rho\pi$, $\omega\pi\pi$
1670± 20		ATKINSON	83B	OMEG		20–70 $\gamma p \rightarrow 3\pi X$
1657± 13		CORDIER	81	DM1		$e^+e^- \rightarrow \omega 2\pi$
1679± 34	21	ESPOSITO	80	FRAM		$e^+e^- \rightarrow 3\pi$
1652± 17		COSME	79	OSPK	0	$e^+e^- \rightarrow 3\pi$

[1] From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+\pi^-\pi^0$ and ANTONELLI 92 on the $\omega\pi^+\pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.

[2] Using results of CORDIER 81 and preliminary data of DOLINSKY 91 and ANTONELLI 92.

[3] Using the data of AKHMETSHIN 00D and ANTONELLI 92. The $\rho\pi$ dominance for the energy dependence of the $\omega(1420)$ and $\omega(1650)$ width assumed.

[4] Using data from BARKOV 87, DOLINSKY 91, and ANTONELLI 92.

[5] Using the data from ANTONELLI 92.

[6] Using the data from IVANOV 81 and BISELLO 88B.

[7] Using the data from BISELLO 91C.

[8] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92.

[9] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states.

$\omega(1650)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
315± 35 OUR ESTIMATE						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$230 \pm 30 \pm 20$		AUBERT,B	04N	BABR		10.6 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \gamma$
$490^{+200}_{-150} \pm 130$	1.2M	[10] ACHASOV	03D	RVUE		0.44–2.00 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
250 ± 14		[11] HENNER	02	RVUE		1.2–2.0 $e^+ e^- \rightarrow \rho\pi$, $\omega\pi\pi$
250 ± 50		EUGENIO	01	SPEC		18 $\pi^- p \rightarrow \omega\eta n$
370 ± 25	612	[12] AKHMETSHIN	00D	CMD2		$e^+ e^- \rightarrow \omega\pi^+ \pi^-$
113 ± 20		[13] CLEGG	94	RVUE		
280 ± 24	750	[14] ANTONELLI	92	DM2		1.34–2.4$e^+ e^- \rightarrow \rho\pi$, $\omega\pi\pi$
160 ± 20		ATKINSON	83B	OMEG		20–70 $\gamma p \rightarrow 3\pi X$
136 ± 46		CORDIER	81	DM1		$e^+ e^- \rightarrow \omega 2\pi$
99 ± 49	21	ESPOSITO	80	FRAM		$e^+ e^- \rightarrow 3\pi$
42 ± 17		COSME	79	OSPK	0	$e^+ e^- \rightarrow 3\pi$

[10] From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+ \pi^- \pi^0$ and ANTONELLI 92 on the $\omega\pi^+ \pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.

[11] Using results of CORDIER 81 and preliminary data of DOLINSKY 91 and ANTONELLI 92.

[12] Using the data of AKHMETSHIN 00D and ANTONELLI 92. The $\rho\pi$ dominance for the energy dependence of the $\omega(1420)$ and $\omega(1650)$ width assumed.

[13] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92.

[14] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states.

$\omega(1650)$ DECAY MODES

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

$\omega(1650)$ $\Gamma(i)\Gamma(e^+ e^-)/\Gamma^2(\text{total})$

$\Gamma(\rho\pi) \times \Gamma(e^+ e^-)/\Gamma^2_{\text{total}}$ — $\Gamma_1\Gamma_4/\Gamma^2$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.3 \pm 0.1 \pm 0.1$		AUBERT,B	04N	BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \gamma$
$1.2 \; ^{+0.4}_{-0.1} \pm 0.8$	1.2M	[15,16] ACHASOV	03D	RVUE	0.44–2.00 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
0.921 ± 0.230		[17,18] CLEGG	94	RVUE	
0.479 ± 0.050	750	[19,20] ANTONELLI	92	DM2	1.34–2.4$e^+ e^- \rightarrow \rho\pi$, $\omega\pi\pi$

$\Gamma(\omega\pi\pi) \times \Gamma(e^+e^-)/\Gamma^2_{total}$ — $\Gamma_2\Gamma_4/\Gamma^2$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.41 ±0.09 ±0.13	1.2M	[15,16] ACHASOV 03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.540±0.095		[21] AKHMETSHIN 00D	CMD2	1.2–1.38 $e^+e^- \to \omega\pi^+\pi^-$
0.318±0.080		[17,18] CLEGG 94	RVUE	
0.607±0.061	750	[19,20] ANTONELLI 92	DM2	1.34–2.4 $e^+e^- \to \rho\pi$, $\omega\pi\pi$

$\Gamma(\omega\eta) \times \Gamma(e^+e^-)/\Gamma^2_{total}$ — $\Gamma_3\Gamma_4/\Gamma^2$

VALUE (units 10^{-6})	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<6	90	[22] AKHMETSHIN 03B	CMD2	$e^+e \to \eta\pi^0\gamma$

[15] Calculated by us from the cross section at the peak.
[16] From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+\pi^-\pi^0$ and ANTONELLI 92 on the $\omega\pi^+\pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.
[17] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92.
[18] From the partial and leptonic width given by the authors.
[19] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states.
[20] From the product of the leptonic width and partial branching ratio given by the authors.
[21] Using the data of AKHMETSHIN 00D and ANTONELLI 92. The $\rho\pi$ dominance for the energy dependence of the $\omega(1420)$ and $\omega(1650)$ width assumed.
[22] $\omega(1650)$ mass and width fixed at 1700 MeV and 250 MeV, respectively.

$\omega(1650)$ BRANCHING RATIOS

$\Gamma(\omega\pi\pi)/\Gamma_{total}$ — Γ_2/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
~ 0.35	1.2M	[23] ACHASOV 03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.620±0.014		[24] HENNER 02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi$, $\omega\pi\pi$

$\Gamma(\rho\pi)/\Gamma_{total}$ — Γ_1/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
~ 0.65	1.2M	[23] ACHASOV 03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.380±0.014		[24] HENNER 02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi$, $\omega\pi\pi$

$\Gamma(e^+e^-)/\Gamma_{total}$ Γ_4/Γ

VALUE (units 10^{-7})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 18	1.2M	[24,25] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
32±1		[24] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi$, $\omega\pi\pi$

[23] From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+\pi^-\pi^0$ and ANTONELLI 92 on the $\omega\pi^+\pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.

[24] Assuming that the $\omega(1650)$ decays into $\rho\pi$ and $\omega\pi\pi$ only.

[25] Calculated by us from the cross section at the peak.

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