$\omega(1420)$

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

$\omega(1420)$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
(1400–1450) OUR ESTIMATE					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1400 \pm 50 \pm 130$	1.2M	[1] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
1450 ± 10		[2] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi$, $\omega\pi\pi$
1373 ± 70	177	[3] AKHMETSHIN	00D	CMD2	1.2–1.38 $e^+e^- \to \omega\pi^+\pi^-$
1370 ± 25	5095	ANISOVICH	00H	SPEC	0.0 $p\overline{p} \to \omega\pi^0\pi^0\pi^0$
1400^{+100}_{-200}		[4] ACHASOV	98H	RVUE	$e^+e^- \to \pi^+\pi^-\pi^0$
~ 1400		[5] ACHASOV	98H	RVUE	$e^+e^- \to \omega\pi^+\pi^-$
~ 1460		[6] ACHASOV	98H	RVUE	$e^+e^- \to K^+K^-$
1440 ± 70		[7] CLEGG	94	RVUE	
1419 ± 31	315	[8] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi$

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

[8] From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.

$\omega(1420)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
(180–250) OUR ESTIMATE					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$870^{+500}_{-300} \pm 450$	1.2M	[9] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
199 ± 15		[10] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi$, $\omega\pi\pi$
188 ± 45	177	[11] AKHMETSHIN	00D	CMD2	1.2–1.38 $e^+e^- \to \omega\pi^+\pi^-$
360^{+100}_{-60}	5095	ANISOVICH	00H	SPEC	0.0 $p\overline{p} \to \omega\pi^0\pi^0\pi^0$
240 ± 70		[12] CLEGG	94	RVUE	
174 ± 59	315	[13] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi$

[9] 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.

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

[11] 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.

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

[13] From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.

$\omega(1420)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\rho\pi$	dominant
Γ_2	$\omega\pi\pi$	seen
Γ_3	$b_1(1235)\pi$	seen
Γ_4	e^+e^-	seen

$\omega(1420)$ Γ(i)$\Gamma(e^+e^-)/\Gamma^2$(total)

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

VALUE (units 10^{-6})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.65 ±0.13 ±0.21	1.2M	[14,15] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.625±0.160		[16,17] CLEGG	94	RVUE	
0.466±0.178		[18,20] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi$

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

[15] 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.

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

[17] From the partial and leptonic width given by the authors.

[18] From the product of the leptonic width and partial branching ratio given by the authors.

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

VALUE (units 10^{-8})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.3±1.3	612	[19] AKHMETSHIN 00D		CMD2	1.2–2.4 $e^+e^- \to \omega\pi^+\pi^-$

[19] 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.

[20] From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.

$\omega(1420)$ BRANCHING RATIOS

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

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.301 ± 0.029	[22] HENNER	02	RVUE	1.2–2.0 $e^+ e^- \to \rho\pi$, $\omega\pi\pi$
possibly seen	AKHMETSHIN	00D	CMD2	$e^+ e^- \to \omega\pi^+\pi^-$

$\Gamma(\omega\pi\pi)/\Gamma(b_1(1235)\pi)$ Γ_2/Γ_3

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.60 ± 0.16	5095	ANISOVICH	00H	SPEC	0.0 $p\overline{p} \to \omega\pi^0\pi^0\pi^0$

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

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.699 ± 0.029	[22] 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. • • •					
~ 6.6	1.2M	[21,23] ACHASOV	03D	RVUE	0.44–2.00 $e^+ e^- \to \pi^+\pi^-\pi^0$
23 ± 1		[22] HENNER	02	RVUE	1.2–2.0 $e^+ e^- \to \rho\pi$, $\omega\pi\pi$

[21] Assuming that the $\omega(1420)$ decays into $\rho\pi$ only.

[22] Assuming that the $\omega(1420)$ decays into $\rho\pi$ and $\omega\pi\pi$ only.

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

$\omega(1420)$ REFERENCES

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ACHASOV	02E	PR D66 032001	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)
HENNER	02	EPJ C26 3	V.K. Henner *et al.*	
ACHASOV	01E	PR D63 072002	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)
AKHMETSHIN	00D	PL B489 125	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)
ANISOVICH	00H	PL B485 341	A.V. Anisovich *et al.*	
ACHASOV	99E	PL B462 365	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)
ACHASOV	98H	PR D57 4334	N.N. Achasov, A.A. Kozhevnikov	
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ANTONELLI	92	ZPHY C56 15	A. Antonelli *et al.*	(DM2 Collab.)
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