$\omega(1650)$
was $\omega(1600)$

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

$\omega(1650)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1649± 24 OUR AVERAGE		Error includes scale factor of 2.3.				
1609± 20	315	[1] ANTONELLI	92	DM2		1.34–2.4 $e^+ e^- \to \rho\pi$
1663± 12	435	[2] ANTONELLI	92	DM2		1.34–2.4 $e^+ e^- \to \omega\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1643± 14		[3] ACHASOV	99E	RVUE		0.75–1.80 $e^+ e^- \to \pi^+\pi^-\pi^0$
1820^{+190}_{-150}		[4] ACHASOV	98H	RVUE		$e^+ e^- \to \pi^+\pi^-\pi^0$
1840^{+100}_{-70}		[5] ACHASOV	98H	RVUE		$e^+ e^- \to \omega\pi^+\pi^-$
1780^{+170}_{-300}		[6] ACHASOV	98H	RVUE		$e^+ e^- \to K^+K^-$
~ 2100		[7] ACHASOV	98H	RVUE		$e^+ e^- \to K^0_S K^\pm \pi^\mp$
1600± 30		[1] CLEGG	94	RVUE		$e^+ e^- \to \rho\pi$
1607± 10		[2] CLEGG	94	RVUE		$e^+ e^- \to \omega\pi\pi$
1635± 35		[8] CLEGG	94	RVUE		$e^+ e^- \to \rho\pi$
1625± 21		[8] CLEGG	94	RVUE		$e^+ e^- \to \omega\pi\pi$
1670± 20		ATKINSON	83B	OMEG		20–70 $\gamma p \to 3\pi X$
1657± 13		CORDIER	81	DM1		$e^+ e^- \to \omega 2\pi$
1679± 34	21	ESPOSITO	80	FRAM		$e^+ e^- \to 3\pi$
1652± 17		COSME	79	OSPK	0	$e^+ e^- \to 3\pi$

[1] From a two Breit-Wigner fit.
[2] From a single Breit-Wigner plus background fit.
[3] Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.
[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 single Breit-Wigner fit.

$\omega(1650)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
220±35 OUR AVERAGE		Error includes scale factor of 1.6.				
159±43	315	[9] ANTONELLI	92	DM2		1.34–2.4 $e^+ e^- \to \rho\pi$
240±25	435	[10] ANTONELLI	92	DM2		1.34–2.4 $e^+ e^- \to \omega\pi\pi$

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

272±29		[11] ACHASOV	99E	RVUE	0.75–1.80 $e^+ e^- \to \pi^+ \pi^- \pi^0$
140±50		[9] CLEGG	94	RVUE	$e^+ e^- \to \rho\pi$
86±20		[10] CLEGG	94	RVUE	$e^+ e^- \to \omega\pi\pi$
350±80		[12] CLEGG	94	RVUE	$e^+ e^- \to \rho\pi$
401±63		[12] CLEGG	94	RVUE	$e^+ e^- \to \omega\pi\pi$
160±20		ATKINSON	83B	OMEG	20–70 $\gamma p \to 3\pi X$
136±46		CORDIER	81	DM1	$e^+ e^- \to \omega 2\pi$
99±49	21	ESPOSITO	80	FRAM	$e^+ e^- \to 3\pi$
42±17		COSME	79	OSPK	0 $e^+ e^- \to 3\pi$

[9] From a two Breit-Wigner fit.
[10] From a single Breit-Wigner plus background fit.
[11] Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.
[12] From a single Breit-Wigner fit.

ω(1650) DECAY MODES

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

ω(1650) Γ(i)Γ($e^+ e^-$)/Γ(total)

$\Gamma(\rho\pi) \times \Gamma(e^+ e^-)/\Gamma_{total}$ — $\Gamma_1\Gamma_3/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
134±14	435	[13] ANTONELLI	92	DM2	1.34–2.4 $e^+ e^- \to$ hadrons

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

27± 7		[14] ACHASOV	99E	RVUE	0.75–1.80 $e^+ e^- \to \pi^+ \pi^- \pi^0$
93±27	315	ANTONELLI	92	DM2	1.34–2.4 $e^+ e^- \to \rho\pi$
96±35		DONNACHIE	89	RVUE	$e^+ e^- \to \rho\pi$

[13] From a coupled fit of $\rho\pi$ and $\omega\pi\pi$ channels.
[14] Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.

$\Gamma(\omega\pi\pi) \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_2\Gamma_3/\Gamma$

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
170±17	435	[15] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •					
135±16	435	[16] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \omega\pi\pi$
56±31		DONNACHIE	89	RVUE	$e^+e^- \to \omega 2\pi$

[15] From a coupled fit of $\rho\pi$ and $\omega\pi\pi$ channels.
[16] From a single Breit-Wigner fit.

$\omega(1650)$ BRANCHING RATIOS

$\Gamma(\rho\pi)/\Gamma(\omega\pi\pi)$ — Γ_1/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.17±0.05	[17] ACHASOV	99E	RVUE	0.75–1.80 $e^+e^- \to \pi^+\pi^-\pi^0$

[17] Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,−,+) phases.

$\omega(1650)$ REFERENCES

ACHASOV	99E	PL B462 365	M.N. Achasov et al.	(Novosibirsk SND Collab.)
ACHASOV	98H	PR D57 4334	N.N. Achasov, A.A. Kozhevnikov	
AKHMETSHIN	98	PL B434 426	R.R. Akhmetshin et al.	
CLEGG	94	ZPHY C62 455	A.B. Clegg, A. Donnachie	(LANC, MCHS)
ANTONELLI	92	ZPHY C56 15	A. Antonelli et al.	(DM2 Collab.)
BISELLO	91C	ZPHY C52 227	D. Bisello et al.	(DM2 Collab.)
DOLINSKY	91	PRPL 202 99	S.I. Dolinsky et al.	(NOVO)
DONNACHIE	89	ZPHY C42 663	A. Donnachie, A.B. Clegg	(CERN, MCHS)
BISELLO	88B	ZPHY C39 13	D. Bisello et al.	(PADO, CLER, FRAS+)
BARKOV	87	JETPL 46 164	L.M. Barkov et al.	(NOVO)
		Translated from ZETFP 46 132.		
ATKINSON	83B	PL 127B 132	M. Atkinson et al.	(BONN, CERN, GLAS+)
CORDIER	81	PL 106B 155	A. Cordier et al.	(ORSAY)
IVANOV	81	PL 107B 297	P.M. Ivanov et al.	(NOVO)
ESPOSITO	80	LNC 28 195	B. Esposito et al.	(FRAS, NAPL, PADO+)
COSME	79	NP B152 215	G. Cosme et al.	(IPN)

OTHER RELATED PAPERS

ABELE	99D	PL B468 178	A. Abele et al.	(Crystal Barrel Collab.)
BELOZEROVA	98	PPN 29 63	T.S. Belozerova, V.K. Henner	
		Translated from FECAY 29 148.		
ACHASOV	97F	PAN 60 2029	N.N. Achasov, A.A. Kozhevnikov	(NOVM)
		Translated from YAF 60 2212.		
DOLINSKY	91	PRPL 202 99	S.I. Dolinsky et al.	(NOVO)
ATKINSON	87	ZPHY C34 157	M. Atkinson et al.	(BONN, CERN, GLAS+)
ATKINSON	84	NP B231 15	M. Atkinson et al.	(BONN, CERN, GLAS+)