NODE=M126

$\omega(1650)$

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

$\omega(1650)$ MASS

NODE=M126205

NODE=M126M

→ NOT CHECKED ←

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
1670± 30 OUR ESTIMATE						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1667± 13± 6		AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow \omega\pi^+\pi^-\gamma$	
1645± 8	13	AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow \omega\eta\gamma$	
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	$e^+e^- \rightarrow \omega\pi^+\pi^-$	OCCUR=2
1820^{+190}_{-150}		[4] ACHASOV	98H	RVUE	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$	
1840^{+100}_{-70}		[5] ACHASOV	98H	RVUE	$e^+e^- \rightarrow \omega\pi^+\pi^-$	OCCUR=2
1780^{+170}_{-300}		[6] ACHASOV	98H	RVUE	$e^+e^- \rightarrow K^+K^-$	OCCUR=3
∼ 2100		[7] ACHASOV	98H	RVUE	$e^+e^- \rightarrow K^0_S K^\pm\pi^\mp$	OCCUR=4
1606± 9		[8] CLEGG	94	RVUE		OCCUR=5
1662± 13	750	[9] ANTONELLI	92	DM2	1.34–2.4$e^+e^- \rightarrow \rho\pi, \omega\pi\pi$	OCCUR=4
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	$e^+e^- \rightarrow 3\pi$	

[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. NODE=M126M;LINKAGE=VH

[2] Using results of CORDIER 81 and preliminary data of DOLINSKY 91 and ANTONELLI 92. NODE=M126M;LINKAGE=AB

[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. NODE=M126M;LINKAGE=KI

[4] Using data from BARKOV 87, DOLINSKY 91, and ANTONELLI 92. NODE=M126M;LINKAGE=L1

[5] Using the data from ANTONELLI 92. NODE=M126M;LINKAGE=L2

[6] Using the data from IVANOV 81 and BISELLO 88B. NODE=M126M;LINKAGE=L3

[7] Using the data from BISELLO 91C. NODE=M126M;LINKAGE=L4

[8] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92. NODE=M126M;LINKAGE=AD

[9] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states. NODE=M126M;LINKAGE=AE

$\omega(1650)$ WIDTH

NODE=M126210

NODE=M126W

→ NOT CHECKED ←

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
315± 35 OUR ESTIMATE						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
222± 25± 20		AUBERT	07AU	BABR	10.6 $e^+e^- \rightarrow \omega\pi^+\pi^-\gamma$	
114± 14	13	AUBERT	06D	BABR	10.6 $e^+e^- \rightarrow \omega\eta\gamma$	
230± 30± 20		AUBERT,B	04N	BABR	10.6 $e^+e^- \rightarrow \pi^+\pi^-\pi^0\gamma$	
490^{+200}_{-150}±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	$e^+e^- \rightarrow \omega\pi^+\pi^-$	OCCUR=2
113± 20		[13] CLEGG	94	RVUE		OCCUR=5
280± 24	750	[14] ANTONELLI	92	DM2	1.34–2.4$e^+e^- \rightarrow \rho\pi, \omega\pi\pi$	OCCUR=4
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	$e^+e^- \rightarrow 3\pi$	

[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. NODE=M126W;LINKAGE=VH

[11] Using results of CORDIER 81 and preliminary data of DOLINSKY 91 and ANTONELLI 92. NODE=M126W;LINKAGE=AB

[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. NODE=M126W;LINKAGE=KI

[13] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92. NODE=M126W;LINKAGE=AD

[14] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states. NODE=M126W;LINKAGE=AE

$\omega(1650)$ DECAY MODES

NODE=M126215;NODE=M126

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$\rho\pi$	seen	DESIG=1;OUR EST;→ NOT CHECKED ←
Γ_2	$\omega\pi\pi$	seen	DESIG=2;OUR EST;→ NOT CHECKED ←
Γ_3	$\omega\eta$	seen	DESIG=4;OUR EST;→ NOT CHECKED ←
Γ_4	e^+e^-	seen	DESIG=3;OUR EST;→ NOT CHECKED ←

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

NODE=M126230

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

NODE=M126G3
NODE=M126G3

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	$10.6\ e^+e^- \to \pi^+\pi^-\pi^0\gamma$
$1.2\ {}^{+0.4}_{-0.1} \pm 0.8$	1.2M	[15,16] ACHASOV	03D	RVUE	0.44–$2.00\ e^+e^- \to \pi^+\pi^-\pi^0$
0.921 ± 0.230		[17,18] CLEGG	94	RVUE	
0.479 ± 0.050	750	[19,20] ANTONELLI	92	DM2	1.34–$2.4 e^+e^- \to \rho\pi, \omega\pi\pi$

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

NODE=M126G4
NODE=M126G4

VALUE (units 10^{-7})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
7.0 ± 0.5		AUBERT	07AU	BABR	$10.6\ e^+e^- \to \omega\pi^+\pi^-\gamma$
$4.1 \pm 0.9 \pm 1.3$	1.2M	[15,16] ACHASOV	03D	RVUE	0.44–$2.00\ e^+e^- \to \pi^+\pi^-\pi^0$
5.40 ± 0.95		[21] AKHMETSHIN	00D	CMD2	1.2–$1.38\ e^+e^- \to \omega\pi^+\pi^-$
3.18 ± 0.80		[17,18] CLEGG	94	RVUE	
6.07 ± 0.61	750	[19,20] ANTONELLI	92	DM2	1.34–$2.4\ e^+e^- \to \rho\pi, \omega\pi\pi$

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

NODE=M126G5
NODE=M126G5

VALUE (units 10^{-6})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.57 ± 0.06		13	AUBERT	06D	BABR	$10.6\ e^+e^- \to \omega\eta\gamma$
<6	90		[22] AKHMETSHIN	03B	CMD2	$e^+e \to \eta\pi^0\gamma$

[15] Calculated by us from the cross section at the peak. NODE=M126G;LINKAGE=AW

[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. NODE=M126G;LINKAGE=VH

[17] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92. NODE=M126G;LINKAGE=AD

[18] From the partial and leptonic width given by the authors. NODE=M126G;LINKAGE=SE

[19] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states. NODE=M126G;LINKAGE=AE

[20] From the product of the leptonic width and partial branching ratio given by the authors. NODE=M126G;LINKAGE=ES

[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. NODE=M126G;LINKAGE=KL

[22] $\omega(1650)$ mass and width fixed at 1700 MeV and 250 MeV, respectively. NODE=M126G5;LINKAGE=KH

$\omega(1650)$ BRANCHING RATIOS

NODE=M126225

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

NODE=M126R2
NODE=M126R2

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

NODE=M126R3
NODE=M126R3

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 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$
0.380±0.014		[24] HENNER 02	RVUE	1.2–2.0 $e^+e^- \rightarrow \rho\pi, \omega\pi\pi$

$\Gamma(e^+e^-)/\Gamma_{total}$ Γ_4/Γ

NODE=M126R4
NODE=M126R4

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 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$
32±1		[24] HENNER 02	RVUE	1.2–2.0 $e^+e^- \rightarrow \rho\pi, \omega\pi\pi$

[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. NODE=M126R;LINKAGE=VH

[24] Assuming that the $\omega(1650)$ decays into $\rho\pi$ and $\omega\pi\pi$ only. NODE=M126R;LINKAGE=AC

[25] Calculated by us from the cross section at the peak. NODE=M126R;LINKAGE=AW

ω(1650) REFERENCES

NODE=M126

AUBERT	07AU	PR D76 092005	B. Aubert et al.	(BABAR Collab.)	REFID=52049
AUBERT	06D	PR D73 052003	B. Aubert et al.	(BABAR Collab.)	REFID=51047
AUBERT,B	04N	PR D70 072004	B. Aubert et al.	(BABAR Collab.)	REFID=50184
ACHASOV	03D	PR D68 052006	M.N. Achasov et al.	(Novosibirsk SND Collab.)	REFID=49577
AKHMETSHIN	03B	PL B562 173	R.R. Akhmetshin et al.	(Novosibirsk CMD-2 Collab.)	REFID=49406
ACHASOV	02E	PR D66 032001	M.N. Achasov et al.	(Novosibirsk SND Collab.)	REFID=48815
HENNER	02	EPJ C26 3	V.K. Henner et al.		REFID=49177
ACHASOV	01E	PR D63 072002	M.N. Achasov et al.	(Novosibirsk SND Collab.)	REFID=48311
EUGENIO	01	PL B497 190	P. Eugenio et al.		REFID=48010
AKHMETSHIN	00D	PL B489 125	R.R. Akhmetshin et al.	(Novosibirsk CMD-2 Collab.)	REFID=47935
ACHASOV	99E	PL B462 365	M.N. Achasov et al.	(Novosibirsk SND Collab.)	REFID=47391
ACHASOV	98H	PR D57 4334	N.N. Achasov, A.A. Kozhevnikov		REFID=46323
CLEGG	94	ZPHY C62 455	A.B. Clegg, A. Donnachie	(LANC, MCHS)	REFID=44081
ANTONELLI	92	ZPHY C56 15	A. Antonelli et al.	(DM2 Collab.)	REFID=43168
BISELLO	91C	ZPHY C52 227	D. Bisello et al.	(DM2 Collab.)	REFID=41867
DOLINSKY	91	PRPL 202 99	S.I. Dolinsky et al.	(NOVO)	REFID=41369
BISELLO	88B	ZPHY C39 13	D. Bisello et al.	(PADO, CLER, FRAS+)	REFID=40581
BARKOV	87	JETPL 46 164	L.M. Barkov et al.	(NOVO)	REFID=40280
		Translated from ZETFP 46 132.			
ATKINSON	83B	PL 127B 132	M. Atkinson et al.	(BONN, CERN, GLAS+)	REFID=21502
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		Translated from YAF 65 1255.			
ACHASOV	02B	PAN 65 153	N.N. Achasov, A.A. Kozhevnikov		REFID=48618
		Translated from YAF 65 158.			
CLOSE	02	PR D65 092003	F.E. Close, A. Donnachie, Yu.S. Kalashnikova		REFID=48838
ACHASOV	00J	PR D62 117503	N.N. Achasov, A.A. Kozhevnikov		REFID=47932
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ABELE	99D	PL B468 178	A. Abele et al.	(Crystal Barrel Collab.)	REFID=47401
BELOZEROVA	98	PPN 29 63	T.S. Belozerova, V.K. Henner		REFID=46350
		Translated from FECAY 29 148.			
ACHASOV	97F	PAN 60 2029	N.N. Achasov, A.A. Kozhevnikov	(NOVM)	REFID=45858
		Translated from YAF 60 2212.			
DOLINSKY	91	PRPL 202 99	S.I. Dolinsky et al.	(NOVO)	REFID=41369
ATKINSON	87	ZPHY C34 157	M. Atkinson et al.	(BONN, CERN, GLAS+)	REFID=40025
ATKINSON	84	NP B231 15	M. Atkinson et al.	(BONN, CERN, GLAS+)	REFID=20574