NODE=M126

$\omega(1650)$

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

See also the $\omega(1420)$ particle listing.

NODE=M126

$\omega(1650)$ MASS

NODE=M126M

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1670 ± 30 OUR ESTIMATE					→ UNCHECKED ←
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1660.0 ± 8.4		[1] LICHARD	23	RVUE	$e^+e^- \to \omega\eta$
1698 ± 10	267	[2] ACHASOV	20B	SND	$e^+e^- \to \omega\eta \to \eta\pi^0\gamma$
$1651 \pm 3 \,^{+16}_{-6}$	183k	[3] ABLIKIM	19AQ	BES	$J/\psi \to K^+K^-\pi^0$
$1673 \,^{+6}_{-7}$		ACHASOV	19	SND	$e^+e^- \to \pi^+\pi^-\pi^0\eta$
$1671 \pm 6 \pm 10$	824	[4] AKHMETSHIN	17A	CMD3	1.4–2.0 $e^+e^- \to \omega\eta$
1660 ± 10	898	[5] ACHASOV	16B	SND	1.34–2.00 $e^+e^- \to \omega\eta$
1680 ± 10	13.1k	[6] AULCHENKO	15A	SND	1.05–1.80 $e^+e^- \to \pi^+\pi^-\pi^0$
$1667 \pm 13 \pm 6$		AUBERT	07AU	BABR	10.6 $e^+e^- \to \omega\pi^+\pi^-\gamma$
1645 ± 8	13	AUBERT	06D	BABR	10.6 $e^+e^- \to \omega\eta\gamma$
$1660 \pm 10 \pm 2$		AUBERT,B	04N	BABR	10.6 $e^+e^- \to \pi^+\pi^-\pi^0\gamma$
$1770 \pm 50 \pm 60$	1.2M	[7] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
1619 ± 5		[8] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi, \omega\pi\pi$
1700 ± 20		EUGENIO	01	SPEC	18 $\pi^- p \to \omega\eta n$
1705 ± 26	612	[9] AKHMETSHIN	00D	CMD2	$e^+e^- \to \omega\pi^+\pi^-$ OCCUR=2
$1820 \,^{+190}_{-150}$		[10] ACHASOV	98H	RVUE	$e^+e^- \to \pi^+\pi^-\pi^0$
$1840 \,^{+100}_{-70}$		[11] ACHASOV	98H	RVUE	$e^+e^- \to \omega\pi^+\pi^-$ OCCUR=2
$1780 \,^{+170}_{-300}$		[12] ACHASOV	98H	RVUE	$e^+e^- \to K^+K^-$ OCCUR=3
~ 2100		[13] ACHASOV	98H	RVUE	$e^+e^- \to K^0_S K^\pm\pi^\mp$ OCCUR=4
1606 ± 9		[14] CLEGG	94	RVUE	OCCUR=5
1662 ± 13	750	[15] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi, \omega\pi\pi$ OCCUR=4
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	$e^+e^- \to 3\pi$

[1] From a VDM fit to AKHMETSHIN 17A $\omega\eta$ data with two additional resonances of low statistical evidences. NODE=M126M;LINKAGE=J

[2] From a fit with contributions from $\omega(1420)$, $\omega(1650)$, and $\phi(1680)$. The mass of $\omega(1420)$ is fixed to the PDG 18 value of 1420 MeV. Fixing also the width of $\omega(1420)$ to the PDG 18 value of 220 MeV results in 1694 ± 9 MeV measurement. NODE=M126M;LINKAGE=H

[3] Could also be $\rho(1700)$. Branching ratio $J/\psi \to X\pi^0 \to K^+K^-\pi^0 = (5.3 \pm 0.3^{+0.6}_{-0.5}) \times 10^{-5}$. NODE=M126M;LINKAGE=G

[4] From a fit of the interfering $\omega(1420)$ and $\omega(1650)$ with a relative phase of π and other parameters floating. NODE=M126M;LINKAGE=F

[5] From a fit with contributions from $\omega(1420)$, $\omega(1650)$, and $\phi(1680)$. NODE=M126M;LINKAGE=E

[6] From a fit with contributions from $\omega(782)$, $\phi(1020)$, $\omega(1420)$, and $\omega(1650)$. See ACHASOV 20A for a further analysis of the $\pi^+\pi^-\pi^0$ data. NODE=M126M;LINKAGE=A

[7] 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

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

[9] 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

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

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

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

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

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

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

$\omega(1650)$ WIDTH

NODE=M126W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
315± 35 OUR ESTIMATE					→ UNCHECKED ←
• • • We do not use the following data for averages, fits, limits, etc. • • •					
106± 15		[1] LICHARD	23	RVUE	$e^+e^- \to \omega\eta$
110± 16	267	[2] ACHASOV	20B	SND	$e^+e^- \to \omega\eta \to \eta\pi^0\gamma$
$194\pm 8^{+15}_{-7}$	183k	[3] ABLIKIM	19AQ	BES	$J/\psi \to K^+K^-\pi^0$
95± 11		ACHASOV	19	SND	$e^+e^- \to \pi^+\pi^-\pi^0\eta$
113± 9± 10	824	[4] AKHMETSHIN	17A	CMD3	1.4–2.0 $e^+e^- \to \omega\eta$
110± 20	898	[5] ACHASOV	16B	SND	1.34–2.00 $e^+e^- \to \omega\eta$
310± 30	13.1k	[6] AULCHENKO	15A	SND	1.05–1.80 $e^+e^- \to \pi^+\pi^-\pi^0$
222± 25± 20		AUBERT	07AU	BABR	10.6 $e^+e^- \to \omega\pi^+\pi^-\gamma$
114± 14	13	AUBERT	06D	BABR	10.6 $e^+e^- \to \omega\eta\gamma$
230± 30± 20		AUBERT,B	04N	BABR	10.6 $e^+e^- \to \pi^+\pi^-\pi^0\gamma$
$490^{+200}_{-150}\pm 130$	1.2M	[7] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
250± 14		[8] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi, \omega\pi\pi$
250± 50		EUGENIO	01	SPEC	18 $\pi^- p \to \omega\eta n$
370± 25	612	[9] AKHMETSHIN	00D	CMD2	$e^+e^- \to \omega\pi^+\pi^-$
113± 20		[10] CLEGG	94	RVUE	
280± 24	750	[11] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi, \omega\pi\pi$
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	$e^+e^- \to 3\pi$

[1] From a VDM fit to AKHMETSHIN 17A $\omega\eta$ data with two additional resonances of low statistical evidences. NODE=M126W;LINKAGE=J

[2] From a fit with contributions from $\omega(1420)$, $\omega(1650)$, and $\phi(1680)$. The mass of $\omega(1420)$ is fixed to the PDG 18 value of 1420 MeV. Fixing also the width of $\omega(1420)$ to the PDG 18 value of 220 MeV results in 94 ± 13 MeV measurement. NODE=M126W;LINKAGE=H

[3] Could also be $\rho(1700)$. Branching ratio $J/\psi \to X\pi^0 \to K^+K^-\pi^0 = (5.3\pm 0.3^{+0.6}_{-0.5})\times 10^{-5}$. NODE=M126W;LINKAGE=G

[4] From a fit of the interfering $\omega(1420)$ and $\omega(1650)$ with a relative phase of π and other parameters floating. NODE=M126W;LINKAGE=F

[5] From a fit with contributions from $\omega(1420)$, $\omega(1650)$, and $\phi(1680)$. NODE=M126W;LINKAGE=E

[6] From a fit with contributions from $\omega(782)$, $\phi(1020)$, $\omega(1420)$, and $\omega(1650)$. See ACHASOV 20A for a further analysis of the $\pi^+\pi^-\pi^0$ data. NODE=M126W;LINKAGE=A

[7] 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

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

[9] 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

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

[11] 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;→ UNCHECKED ←
Γ_2	$\rho(1450)\pi$	seen	DESIG=6
Γ_3	$\omega\pi\pi$	seen	DESIG=2;OUR EST;→ UNCHECKED ←
Γ_4	$\omega\eta$	seen	DESIG=4;OUR EST;→ UNCHECKED ←
Γ_5	e^+e^-	seen	DESIG=3;OUR EST;→ UNCHECKED ←
Γ_6	$\pi^0\gamma$	not seen	DESIG=5

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

NODE=M126230

$\Gamma(\rho\pi)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_1/\Gamma \times \Gamma_5/\Gamma$

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. • • •					
1.56 ±0.23	13.1k	[1] AULCHENKO	15A	SND	1.05–1.80 $e^+e^- \to \pi^+\pi^-\pi^0$
1.3 ±0.1 ±0.1		AUBERT,B	04N	BABR	10.6 $e^+e^- \to \pi^+\pi^-\pi^0\gamma$
1.2 $^{+0.4}_{-0.1}$ ±0.8	1.2M	[2,3] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.921±0.230		[4,5] CLEGG	94	RVUE	
0.479±0.050	750	[6,7] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi, \omega\pi\pi$

[1] From a fit with contributions from $\omega(782)$, $\phi(1020)$, $\omega(1420)$, and $\omega(1650)$. See ACHASOV 20A for a further analysis of the $\pi^+\pi^-\pi^0$ data. NODE=M126G3;LINKAGE=A

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

[3] 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

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

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

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

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

$\Gamma(\omega\pi\pi)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_3/\Gamma \times \Gamma_5/\Gamma$

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 ±0.9 ±1.3	1.2M	[1,2] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
5.40±0.95		[3] AKHMETSHIN	00D	CMD2	1.2–1.38 $e^+e^- \to \omega\pi^+\pi^-$
3.18±0.80		[4,5] CLEGG	94	RVUE	
6.07±0.61	750	[6,7] ANTONELLI	92	DM2	1.34–2.4 $e^+e^- \to \rho\pi, \omega\pi\pi$

[1] Calculated by us from the cross section at the peak. NODE=M126G4;LINKAGE=AW

[2] 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=M126G4;LINKAGE=VH

[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=M126G4;LINKAGE=KL

[4] From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92. NODE=M126G4;LINKAGE=AD

[5] From the partial and leptonic width given by the authors. NODE=M126G4;LINKAGE=SE

[6] From the combined fit of the $\rho\pi$ and $\omega\pi\pi$ final states. NODE=M126G4;LINKAGE=AE

[7] From the product of the leptonic width and partial branching ratio given by the authors. NODE=M126G4;LINKAGE=ES

$\Gamma(\omega\eta)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_4/\Gamma \times \Gamma_5/\Gamma$

NODE=M126G5
NODE=M126G5

VALUE (units 10^{-7})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.4 ±0.9	267	[1] ACHASOV	20B	SND	$e^+e^- \to \omega\eta \to \eta\pi^0\gamma$
5.62 $^{+0.45}_{-0.42}$		ACHASOV	19	SND	$e^+e^- \to \pi^+\pi^-\pi^0\eta$
4.5 ±0.3 ±0.3	824	[2] AKHMETSHIN	17A	CMD3	1.4–2.0 $e^+e^- \to \omega\eta$
4.4 ±0.5	898	[3] ACHASOV	16B	SND	1.34–2.00 $e^+e^- \to \omega\eta$
5.7 ±0.6	13	AUBERT	06D	BABR	10.6 $e^+e^- \to \omega\eta\gamma$
< 60 at 90% CL		[4] AKHMETSHIN	03B	CMD2	$e^+e \to \eta\pi^0\gamma$

[1] From a fit with contributions from $\omega(1420)$, $\omega(1650)$, and $\phi(1680)$. The mass of $\omega(1420)$ is fixed to the PDG 18 value of 1420 MeV. Fixing also the width of $\omega(1420)$ to the PDG 18 value of 220 MeV results in $(5.4 \pm 0.6) \times 10^{-7}$ measurement. NODE=M126G5;LINKAGE=C

[2] From a fit of the interfering $\omega(1420)$ and $\omega(1650)$ with a relative phase of π and other parameters floating. From an alternative fit $\Gamma(\omega(1650) \to \omega\eta)/\Gamma_{total} \times \Gamma(\omega(1650) \to e^+e^-) = 51 \pm 3$ eV. NODE=M126G5;LINKAGE=B

[3] From a fit with contributions from $\omega(1420)$, $\omega(1650)$, and $\phi(1680)$. NODE=M126G5;LINKAGE=A

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

$\omega(1650)$ BRANCHING RATIOS

NODE=M126225

$\Gamma(\rho\pi)/\Gamma_{total}$ 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	[1] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.380 ± 0.014		[2] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi, \omega\pi\pi$

[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=M126R;LINKAGE=VH

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

$\Gamma(\rho(1450)\pi)/\Gamma_{total}$ Γ_2/Γ

NODE=M126R02
NODE=M126R02

VALUE	DOCUMENT ID		TECN	COMMENT
seen	ACHASOV	20A	SND	1.15–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$

$\Gamma(\omega\pi\pi)/\Gamma_{total}$ Γ_3/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	[1] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
0.620 ± 0.014		[2] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi, \omega\pi\pi$

[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=M126R2;LINKAGE=VH

[2] Assuming that the $\omega(1650)$ decays into $\rho\pi$ and $\omega\pi\pi$ only. NODE=M126R2;LINKAGE=AC

$\Gamma(e^+e^-)/\Gamma_{total}$ Γ_5/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	[1,2] ACHASOV	03D	RVUE	0.44–2.00 $e^+e^- \to \pi^+\pi^-\pi^0$
32 ± 1		[2] HENNER	02	RVUE	1.2–2.0 $e^+e^- \to \rho\pi, \omega\pi\pi$

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

[2] Assuming that the $\omega(1650)$ decays into $\rho\pi$ and $\omega\pi\pi$ only. NODE=M126R4;LINKAGE=AC

$\Gamma(\pi^0\gamma)/\Gamma_{total}$ Γ_6/Γ

NODE=M126R00
NODE=M126R00

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	[1] ACHASOV	10D	SND	1.075–2.0 $e^+e^- \to \pi^0\gamma$

[1] From a fit of a VMD model with two effective resonances with masses of 1450 MeV and 1700 MeV to describe the excited vector states $\omega(1420)$, $\rho(1450)$, $\omega(1650)$, and $\rho(1700)$. The width of the highest mass effective resonance is fixed at 315 MeV. NODE=M126R00;LINKAGE=A

$\omega(1650)$ REFERENCES

NODE=M126

LICHARD	23	PR D108 092005	P. Lichard	(OPAV, CTUP)
ACHASOV	20A	EPJ C80 993	M.N. Achasov *et al.*	(SND Collab.)
ACHASOV	20B	EPJ C80 1008	M.N. Achasov *et al.*	(SND Collab.)
ABLIKIM	19AQ	PR D100 032004	M. Ablikim *et al.*	(BESIII Collab.)
ACHASOV	19	PR D99 112004	M.N. Achasov *et al.*	(SND Collab.)
PDG	18	PR D98 030001	M. Tanabashi *et al.*	(PDG Collab.)
AKHMETSHIN	17A	PL B773 150	R.R. Akhmetshin *et al.*	(CMD-3 Collab.)
ACHASOV	16B	PR D94 092002	M.N. Achasov *et al.*	(SND Collab.)
AULCHENKO	15A	JETP 121 27	V.M. Aulchenko *et al.*	(SND Collab.)
		Translated from ZETF 148 34.		
ACHASOV	10D	PR D98 112001	M.N. Achasov *et al.*	(SND Collab.)
AUBERT	07AU	PR D76 092005	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	06D	PR D73 052003	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	04N	PR D70 072004	B. Aubert *et al.*	(BABAR Collab.)
ACHASOV	03D	PR D68 052006	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)
AKHMETSHIN	03B	PL B562 173	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)
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.)
EUGENIO	01	PL B497 190	P. Eugenio *et al.*	
AKHMETSHIN	00D	PL B489 125	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)
ACHASOV	99E	PL B462 365	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)
ACHASOV	98H	PR D57 4334	N.N. Achasov, A.A. Kozhevnikov	
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)
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)

REFID=62426
REFID=60923
REFID=60924
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