NODE=M105

$\rho(1450)$

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

ρ(1450) MASS

NODE=M105205

ρ(1450) MASS

NODE=M105M0

VALUE (MeV)	DOCUMENT ID
1465±25 OUR ESTIMATE This is only an educated guess; the error given is larger than the error on the average of the published values.	

→ UNCHECKED ←

$\eta\rho^0$ MODE

NODE=M105M1

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1506±11	13.4k	[1] GRIBANOV	20	CMD3	1.1–2.0 $e^+e^- \rightarrow \eta\pi^+\pi^-$
1500±10	7.4k	[2] ACHASOV	18	SND	1.22–2.00 $e^+e^- \rightarrow \eta\pi^+\pi^-$
1497±14		[3] AKHMETSHIN	01B	CMD2	$e^+e^- \rightarrow \eta\gamma$
1421±15		[4] AKHMETSHIN	00D	CMD2	$e^+e^- \rightarrow \eta\pi^+\pi^-$
1470±20		ANTONELLI	88	DM2	$e^+e^- \rightarrow \eta\pi^+\pi^-$
1446±10		FUKUI	88	SPEC	8.95 $\pi^- p \rightarrow \eta\pi^+\pi^- n$

[1] Mass and width of the $\rho(770)$ fixed at 775 and 149 MeV, respectively; solution 2 of model 2, $\eta \rightarrow \gamma\gamma$ decays used. NODE=M105M1;LINKAGE=B

[2] From the combined fit of AULCHENKO 15 and ACHASOV 18 in the model with the interfering $\rho(1450)$, $\rho(1700)$ and $\rho(2150)$ with the parameters of the $\rho(1450)$ and $\rho(1700)$ floating and the mass and width of the $\rho(2150)$ fixed at 2155 MeV and 320 MeV, respectively. The phases of the resonances are π, 0 and π, respectively. NODE=M105M1;LINKAGE=A

[3] Using the data of AKHMETSHIN 01B on $e^+e^- \rightarrow \eta\gamma$, AKHMETSHIN 00D and ANTONELLI 88 on $e^+e^- \rightarrow \eta\pi^+\pi^-$. NODE=M105M;LINKAGE=SW

[4] Using the data of ANTONELLI 88, DOLINSKY 91, and AKHMETSHIN 00D. The energy-independent width of the $\rho(1450)$ and $\rho(1700)$ mesons assumed. NODE=M105M1;LINKAGE=KL

$\omega\pi$ MODE

NODE=M105M3

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1510± 7	10.2k	[1] ACHASOV	16D	SND	1.05–2.00 $e^+e^- \rightarrow \pi^0\pi^0\gamma$ (OCCUR=2)
$1544\pm22^{+11}_{-46}$	821	[2] MATVIENKO	15	BELL	$\overline{B}^0 \rightarrow D^{*+}\omega\pi^-$
1491±19	7815	[3] ACHASOV	13	SND	1.05–2.00 $e^+e^- \rightarrow \pi^0\pi^0\gamma$
1582±17±25	2382	[4] AKHMETSHIN	03B	CMD2	$e^+e \rightarrow \pi^0\pi^0\gamma$
$1349\pm25^{+10}_{-5}$	341	[5] ALEXANDER	01B	CLE2	$B \rightarrow D^{(*)}\omega\pi^-$
1523±10		[6] EDWARDS	00A	CLE2	$\tau^- \rightarrow \omega\pi^-\nu_\tau$
1463±25		[7] CLEGG	94	RVUE	
1250		[8] ASTON	80C	OMEG	20–70 $\gamma p \rightarrow \omega\pi^0 p$
1290±40		[8] BARBER	80C	SPEC	3–5 $\gamma p \rightarrow \omega\pi^0 p$

[1] From a phenomenological model based on vector meson dominance with interfering $\rho(770)$, $\rho(1450)$, and $\rho(1700)$. The $\rho(1700)$ mass and width are fixed at 1720 MeV and 250 MeV, respectively. Systematic uncertainties not estimated. Supersedes ACHASOV 13. NODE=M105M3;LINKAGE=D

[2] Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming equal probabilities of the $\rho(1450) \rightarrow \pi\pi$ and $\rho(1450) \rightarrow \omega\pi$ decays. NODE=M105M3;LINKAGE=C

[3] From a phenomenological model based on vector meson dominance with the interfering $\rho(1450)$ and $\rho(1700)$ and their widths fixed at 400 and 250 MeV, respectively. Systematic uncertainty not estimated. NODE=M105M3;LINKAGE=AC

[4] Using the data of AKHMETSHIN 03B and BISELLO 91B assuming the $\omega\pi^0$ and $\pi^+\pi^-$ mass dependence of the total width. $\rho(1700)$ mass and width fixed at 1700 MeV and 240 MeV, respectively. NODE=M105M3;LINKAGE=HK

[5] Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming the $\omega\pi^-$ mass dependence for the total width. NODE=M105M3;LINKAGE=3Z

[6] Mass-independent width parameterization. $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV respectively. NODE=M105M;LINKAGE=E1

[7] Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L. NODE=M105M3;LINKAGE=B

[8] Not separated from $b_1(1235)$, not pure $J^P = 1^-$ effect. NODE=M105M3;LINKAGE=A

4π MODE

NODE=M105M6

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1435±40	ABELE	01B	CBAR	0.0 $\overline{p} n \rightarrow 2\pi^- 2\pi^0\pi^+$
1350±50	ACHASOV	97	RVUE	$e^+e^- \rightarrow 2(\pi^+\pi^-)$
1449± 4	[1] ARMSTRONG	89E	OMEG	300 $pp \rightarrow pp2(\pi^+\pi^-)$

[1] Not clear whether this observation has I=1 or 0. NODE=M105M6;LINKAGE=A

$\pi\pi$ MODE

NODE=M105M5

VALUE (MeV)		EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1226.22±24.76		34M	[1] IGNATOV	24	CMD3	$e^+e^- \to \pi^+\pi^-$
1326.35± 3.46			[2] BARTOS	17	RVUE	$e^+e^- \to \pi^+\pi^-$
1342.31±46.62			[3] BARTOS	17A	RVUE	$e^+e^- \to \pi^+\pi^-$
1373.83±11.37			[4] BARTOS	17A	RVUE	$\tau^- \to \pi^-\pi^0\nu_\tau$
1429 ±41		20k	[5] LEES	17C	BABR	$J/\psi \to \pi^+\pi^-\pi^0$
1350 ±20	$^{+20}_{-30}$	63.5k	[6] ABRAMOWICZ	12	ZEUS	$e p \to e\pi^+\pi^- p$
1493 ±15			[7] LEES	12G	BABR	$e^+e^- \to \pi^+\pi^-\gamma$
1446 ± 7	±28	5.4M	[8,9] FUJIKAWA	08	BELL	$\tau^- \to \pi^-\pi^0\nu_\tau$
1328 ±15			[10] SCHAEL	05C	ALEP	$\tau^- \to \pi^-\pi^0\nu_\tau$
1406 ±15		87k	[8,11] ANDERSON	00A	CLE2	$\tau^- \to \pi^-\pi^0\nu_\tau$
∼ 1368			[12] ABELE	99C	CBAR	0.0 $\overline{p}d \to \pi^+\pi^-\pi^- p$
1348 ±33			BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \to 2\pi^+\pi^-$
1411 ±14			[13] ABELE	97	CBAR	$\overline{p}n \to \pi^-\pi^0\pi^0$
1370 $^{+90}_{-70}$			ACHASOV	97	RVUE	$e^+e^- \to \pi^+\pi^-$
1359 ±40			[11] BERTIN	97C	OBLX	0.0 $\overline{p}p \to \pi^+\pi^-\pi^0$
1282 ±37			BERTIN	97D	OBLX	0.05 $\overline{p}p \to 2\pi^+2\pi^-$
1424 ±25			BISELLO	89	DM2	$e^+e^- \to \pi^+\pi^-$
1265.5 ±75.3			DUBNICKA	89	RVUE	$e^+e^- \to \pi^+\pi^-$
1292 ±17			[14] KURDADZE	83	OLYA	0.64–1.4 $e^+e^- \to \pi^+\pi^-$

OCCUR=2 (BARTOS 17); OCCUR=2 (BARTOS 17A, τ^-)

[1] From a fit of the pion form factor using the GOUNARIS 68 parametrization with the complex phase of the $\rho-\omega$ interference leaving $\rho(1450)$, $\rho(1700)$ resonances as free parameters of the fit. The fit uses also data from CMD-2 and DM2 experiments. Systematic errors not estimated. NODE=M105M5;LINKAGE=G

[2] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of LEES 12G and ABLIKIM 16C. NODE=M105M5;LINKAGE=D

[3] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of ACHASOV 06, AKHMETSHIN 07, AUBERT 09AS, and AMBROSINO 11A. NODE=M105M5;LINKAGE=E

[4] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of FUJIKAWA 08. NODE=M105M5;LINKAGE=F

[5] From a Dalitz plot analysis in an isobar model with $\rho(1450)$ and $\rho(1700)$ masses and widths floating. NODE=M105M5;LINKAGE=B

[6] Using the KUHN 90 parametrization of the pion form factor, neglecting $\rho-\omega$ interference. NODE=M105M5;LINKAGE=AB

[7] Using the GOUNARIS 68 parametrization of the pion form factor leaving the masses and widths of the $\rho(1450)$, $\rho(1700)$, and $\rho(2150)$ resonances as free parameters of the fit. NODE=M105M5;LINKAGE=LE

[8] From the GOUNARIS 68 parametrization of the pion form factor. NODE=M105M;LINKAGE=1K

[9] $|F_\pi(0)|^2$ fixed to 1. NODE=M105M5;LINKAGE=FU

[10] From the combined fit of the τ^- data from ANDERSON 00A and SCHAEL 05C and e^+e^- data from the compilation of BARKOV 85, AKHMETSHIN 04, and ALOISIO 05. $\rho(1700)$ mass and width fixed at 1713 MeV and 235 MeV, respectively. Supersedes BARATE 97M. NODE=M105M5;LINKAGE=SC

[11] $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV, respectively. NODE=M105M5;LINKAGE=A

[12] $\rho(1700)$ mass and width fixed at 1780 MeV and 275 MeV respectively. NODE=M105M5;LINKAGE=C5

[13] T-matrix pole. NODE=M105M5;LINKAGE=QQ

[14] Using for $\rho(1700)$ mass and width 1600 ± 20 and 300 ± 10 MeV respectively. NODE=M105M5;LINKAGE=KD

$K\overline{K}$ MODE

NODE=M105M7

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1208 ±8 ±9	190k	[1] AAIJ	16N	LHCB		$D^0 \to K^0_S K^\pm\pi^\mp$
1422.8±6.5	27k	[2] ABELE	99D	CBAR	±	0.0 $\overline{p}p \to K^+K^-\pi^0$

[1] Using the GOUNARIS 68 parameterization with fixed width. NODE=M105M7;LINKAGE=A

[2] K-matrix pole. Isospin not determined, could be $\omega(1420)$. NODE=M105M7;LINKAGE=AN

$K\overline{K}^*(892)$ + c.c. MODE

NODE=M105M8

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1505±19±7	AUBERT	08S	BABR	10.6 $e^+e^- \to K\overline{K}^*(892)\gamma$

$m_{\rho(1450)^0} - m_{\rho(1450)^\pm}$

NODE=M105DM

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−31.53±47.99	[1] BARTOS	17A	RVUE	$e^+e^- \to \pi^+\pi^-$, $\tau^- \to \pi^-\pi^0\nu_\tau$

[1] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of ACHASOV 06, AKHMETSHIN 07, AUBERT 09AS, AMBROSINO 11A, and FUJIKAWA 08. NODE=M105DM;LINKAGE=A

$\rho(1450)$ WIDTH

NODE=M105210

$\rho(1450)$ WIDTH

NODE=M105W0

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
400± 60 OUR ESTIMATE This is only an educated guess; the error given is larger than the error on the average of the published values.				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
480±180	[1] ACHASOV	10D	SND	1.075–2.0 $e^+e^- \to \pi^0\gamma$

→ UNCHECKED ←

[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 $\rho(1700)$. Systematic errors not evaluated. NODE=M105W0;LINKAGE=A

$\eta\rho^0$ MODE

NODE=M105W1

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
321±27	13.4k	[1] GRIBANOV	20	CMD3	1.1–2.0 $e^+e^- \to \eta\pi^+\pi^-$
280±20	7.4k	[2] ACHASOV	18	SND	1.22–2.00 $e^+e^- \to \eta\pi^+\pi^-$
226±44		[3] AKHMETSHIN	01B	CMD2	$e^+e^- \to \eta\gamma$
211±31		[4] AKHMETSHIN	00D	CMD2	$e^+e^- \to \eta\pi^+\pi^-$
230±30		ANTONELLI	88	DM2	$e^+e^- \to \eta\pi^+\pi^-$
60±15		FUKUI	88	SPEC	8.95 $\pi^- p \to \eta\pi^+\pi^- n$

[1] Mass and width of the $\rho(770)$ fixed at 775 and 149 MeV, respectively; solution 2 of model 2, $\eta \to \gamma\gamma$ decays used. NODE=M105W1;LINKAGE=B

[2] From the combined fit of AULCHENKO 15 and ACHASOV 18 in the model with the interfering $\rho(1450)$, $\rho(1700)$ and $\rho(2150)$ with the parameters of the $\rho(1450)$ and $\rho(1700)$ floating and the mass and width of the $\rho(2150)$ fixed at 2155 MeV and 320 MeV, respectively. The phases of the resonances are π, 0 and π, respectively. NODE=M105W1;LINKAGE=A

[3] Using the data of AKHMETSHIN 01B on $e^+e^- \to \eta\gamma$, AKHMETSHIN 00D and ANTONELLI 88 on $e^+e^- \to \eta\pi^+\pi^-$. NODE=M105W;LINKAGE=SW

[4] Using the data of ANTONELLI 88, DOLINSKY 91, and AKHMETSHIN 00D. The energy-independent width of the $\rho(1450)$ and $\rho(1700)$ mesons assumed. NODE=M105W1;LINKAGE=KL

$\omega\pi$ MODE

NODE=M105W3

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
440± 40	10.2k	[1] ACHASOV	16D	SND	1.05–2.00 $e^+e^- \to \pi^0\pi^0\gamma$
303^{+31+69}_{-52-7}	821	[2] MATVIENKO	15	BELL	$\overline{B}^0 \to D^{*+}\omega\pi^-$
429± 42±10	2382	[3] AKHMETSHIN	03B	CMD2	$e^+e \to \pi^0\pi^0\gamma$
$547\pm 86^{+46}_{-45}$	341	[4] ALEXANDER	01B	CLE2	$B \to D^{(*)}\omega\pi^-$
400± 35		[5] EDWARDS	00A	CLE2	$\tau^- \to \omega\pi^-\nu_\tau$
311± 62		[6] CLEGG	94	RVUE	
300		[7] ASTON	80C	OMEG	20–70 $\gamma p \to \omega\pi^0 p$
320±100		[7] BARBER	80C	SPEC	3–5 $\gamma p \to \omega\pi^0 p$

OCCUR=3

[1] From a phenomenological model based on vector meson dominance with interfering $\rho(770)$, $\rho(1450)$, and $\rho(1700)$. The $\rho(1700)$ mass and width are fixed at 1720 MeV and 250 MeV, respectively. Systematic uncertainties not estimated. Supersedes ACHASOV 13. NODE=M105W3;LINKAGE=D

[2] Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming equal probabilities of the $\rho(1450) \to \pi\pi$ and $\rho(1450) \to \omega\pi$ decays. NODE=M105W3;LINKAGE=C

[3] Using the data of AKHMETSHIN 03B and BISELLO 91B assuming the $\omega\pi^0$ and $\pi^+\pi^-$ mass dependence of the total width. $\rho(1700)$ mass and width fixed at 1700 MeV and 240 MeV, respectively. NODE=M105W3;LINKAGE=HK

[4] Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming the $\omega\pi^-$ mass dependence for the total width. NODE=M105W3;LINKAGE=3Z

[5] Mass-independent width parameterization. $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV respectively. NODE=M105W;LINKAGE=E1

[6] Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L. NODE=M105W3;LINKAGE=B

[7] Not separated from $b_1(1235)$, not pure $J^P = 1^-$ effect. NODE=M105W3;LINKAGE=A

4π MODE

NODE=M105W66

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
325±100	ABELE	01B	CBAR	0.0 $\overline{p}n \to 2\pi^-2\pi^0\pi^+$

$\pi\pi$ MODE

NODE=M105W5
NODE=M105W5

VALUE (MeV)		EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
272.97±45.53		34M	[1] IGNATOV	24	CMD3	$e^+e^- \to \pi^+\pi^-$
324.13±12.01			[2] BARTOS	17	RVUE	$e^+e^- \to \pi^+\pi^-$
492.17±138.38			[3] BARTOS	17A	RVUE	$e^+e^- \to \pi^+\pi^-$
340.87±23.84			[4] BARTOS	17A	RVUE	$\tau^- \to \pi^-\pi^0\nu_\tau$
576 ±29		20k	[5] LEES	17C	BABR	$J/\psi \to \pi^+\pi^-\pi^0$
460 ±30	$^{+40}_{-45}$	63.5k	[6] ABRAMOWICZ	12	ZEUS	$e p \to e\pi^+\pi^- p$
427 ±31			[7] LEES	12G	BABR	$e^+e^- \to \pi^+\pi^-\gamma$
434 ±16	±60	5.4M	[8,9] FUJIKAWA	08	BELL	$\tau^- \to \pi^-\pi^0\nu_\tau$
468 ±41			[10] SCHAEL	05C	ALEP	$\tau^- \to \pi^-\pi^0\nu_\tau$
455 ±41		87k	[8,11] ANDERSON	00A	CLE2	$\tau^- \to \pi^-\pi^0\nu_\tau$
~374			[12] ABELE	99C	CBAR	0.0 $\overline{p}d \to \pi^+\pi^-\pi^- p$
275 ±10			BERTIN	98	OBLX	0.05–0.405 $\overline{n}p \to \pi^+\pi^+\pi^-$
343 ±20			[13] ABELE	97	CBAR	$\overline{p}n \to \pi^-\pi^0\pi^0$
310 ±40			[11] BERTIN	97C	OBLX	0.0 $\overline{p}p \to \pi^+\pi^-\pi^0$
236 ±36			BERTIN	97D	OBLX	0.05 $\overline{p}p \to 2\pi^+2\pi^-$
269 ±31			BISELLO	89	DM2	$e^+e^- \to \pi^+\pi^-$
391 ±70			DUBNICKA	89	RVUE	$e^+e^- \to \pi^+\pi^-$
218 ±46			[14] KURDADZE	83	OLYA	0.64–1.4 $e^+e^- \to \pi^+\pi^-$

OCCUR=2

[1] From a fit of the pion form factor using the GOUNARIS 68 parametrization with the complex phase of the $\rho-\omega$ interference leaving $\rho(1450)$, $\rho(1700)$ resonances as free parameters of the fit. The fit uses also data from CMD-2 and DM2 experiments. Systematic errors not estimated. NODE=M105W5;LINKAGE=F
[2] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of LEES 12G and ABLIKIM 16C. NODE=M105W5;LINKAGE=C
[3] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of ACHASOV 06, AKHMETSHIN 07, AUBERT 09AS, and AMBROSINO 11A. NODE=M105W5;LINKAGE=D
[4] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of FUJIKAWA 08. NODE=M105W5;LINKAGE=E
[5] From a Dalitz plot analysis in an isobar model with $\rho(1450)$ and $\rho(1700)$ masses and widths floating. NODE=M105W5;LINKAGE=B
[6] Using the KUHN 90 parametrization of the pion form factor, neglecting $\rho-\omega$ interference. NODE=M105W5;LINKAGE=AB
[7] Using the GOUNARIS 68 parametrization of the pion form factor leaving the masses and widths of the $\rho(1450)$, $\rho(1700)$, and $\rho(2150)$ resonances as free parameters of the fit. NODE=M105W5;LINKAGE=LE
[8] From the GOUNARIS 68 parametrization of the pion form factor. NODE=M105W;LINKAGE=1K
[9] $|F_\pi(0)|^2$ fixed to 1. NODE=M105W5;LINKAGE=FU
[10] From the combined fit of the τ^- data from ANDERSON 00A and SCHAEL 05C and e^+e^- data from the compilation of BARKOV 85, AKHMETSHIN 04, and ALOISIO 05. $\rho(1700)$ mass and width fixed at 1713 MeV and 235 MeV, respectively. Supersedes BARATE 97M. NODE=M105W5;LINKAGE=SC
[11] $\rho(1700)$ mass and width fixed at 1700 MeV and 235 MeV, respectively. NODE=M105W5;LINKAGE=A
[12] $\rho(1700)$ mass and width fixed at 1780 MeV and 275 MeV respectively. NODE=M105W5;LINKAGE=C5
[13] T-matrix pole. NODE=M105W5;LINKAGE=QQ
[14] Using for $\rho(1700)$ mass and width 1600 ± 20 and 300 ± 10 MeV respectively. NODE=M105W5;LINKAGE=KD

$K\overline{K}$ MODE

NODE=M105W7
NODE=M105W7

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
410 ±19 ±35	190k	[1] AAIJ	16N	LHCB		$D^0 \to K^0_S K^\pm\pi^\mp$
146.5±10.5	27k	[2] ABELE	99D	CBAR	±	0.0 $\overline{p}p \to K^+K^-\pi^0$

[1] Using the GOUNARIS 68 parameterization with fixed mass. NODE=M105W7;LINKAGE=A
[2] K-matrix pole. Isospin not determined, could be $\omega(1420)$. NODE=M105W7;LINKAGE=AN

$K\overline{K}^*(892)$ + c.c. MODE

NODE=M105W8
NODE=M105W8

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
418±25±4	AUBERT	08S	BABR	10.6 $e^+e^- \to K\overline{K}^*(892)\gamma$

$\Gamma_{\rho(1450)^0} - \Gamma_{\rho(1450)^\pm}$

NODE=M105DW
NODE=M105DW

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
151.30±140.42	[1] BARTOS	17A	RVUE	$e^+e^- \to \pi^+\pi^-$, $\tau^- \to \pi^-\pi^0\nu_\tau$

[1] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of ACHASOV 06, AKHMETSHIN 07, AUBERT 09AS, AMBROSINO 11A, and FUJIKAWA 08. NODE=M105DW;LINKAGE=A

$\rho(1450)$ DECAY MODES

NODE=M105215;NODE=M105

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$\pi\pi$	seen	DESIG=1;OUR EST;→ UNCHECKED ←
Γ_2	$\pi^+\pi^-$	seen	DESIG=20;OUR EVAL;→ UNCHECKED ←
Γ_3	4π	seen	DESIG=2;OUR EST;→ UNCHECKED ←
Γ_4	$\omega\pi$		DESIG=6
Γ_5	$a_1(1260)\pi$		DESIG=10
Γ_6	$h_1(1170)\pi$		DESIG=11
Γ_7	$\pi(1300)\pi$		DESIG=12
Γ_8	$\rho\rho$		DESIG=13
Γ_9	$\rho(\pi\pi)_{S\text{-wave}}$		DESIG=14
Γ_{10}	e^+e^-	seen	DESIG=4;OUR EST;→ UNCHECKED ←
Γ_{11}	$\eta\rho$	seen	DESIG=3
Γ_{12}	$a_2(1320)\pi$	not seen	DESIG=8;OUR EST;→ UNCHECKED ←
Γ_{13}	$K\overline{K}$	seen	DESIG=7;OUR EVAL;→ UNCHECKED ←
Γ_{14}	K^+K^-	seen	DESIG=21;OUR EVAL;→ UNCHECKED ←
Γ_{15}	$K\overline{K}^*(892)+$ c.c.	possibly seen	DESIG=15;OUR EST;→ UNCHECKED ←
Γ_{16}	$\pi^0\gamma$	seen	DESIG=23;OUR EST;→ UNCHECKED ←
Γ_{17}	$\eta\gamma$	seen	DESIG=9
Γ_{18}	$f_0(500)\gamma$	not seen	DESIG=16;OUR EST;→ UNCHECKED ←
Γ_{19}	$f_0(980)\gamma$	not seen	DESIG=17;OUR EST;→ UNCHECKED ←
Γ_{20}	$f_0(1370)\gamma$	not seen	DESIG=18;OUR EST;→ UNCHECKED ←
Γ_{21}	$f_2(1270)\gamma$	not seen	DESIG=19;OUR EST;→ UNCHECKED ←

$\rho(1450)$ $\Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$

NODE=M105220

$\Gamma(\pi\pi) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_1\Gamma_{10}/\Gamma$

NODE=M105G3
NODE=M105G3

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.12	[1] DIEKMAN	88	RVUE	$e^+e^- \to \pi^+\pi^-$
$0.027^{+0.015}_{-0.010}$	[2] KURDADZE	83	OLYA	0.64–1.4 $e^+e^- \to \pi^+\pi^-$

[1] Using total width = 235 MeV. NODE=M105G3;LINKAGE=B
[2] Using for $\rho(1700)$ mass and width 1600 ± 20 and 300 ± 10 MeV respectively. NODE=M105G3;LINKAGE=KD

$\Gamma(\eta\rho) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_{11}\Gamma_{10}/\Gamma$

NODE=M105G4
NODE=M105G4

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
335±27±20	13.4k	[1] GRIBANOV	20	CMD3	1.1–2.0 $e^+e^- \to \eta\pi^+\pi^-$
210±24±10		[2] LEES	18	BABR	$e^+e^- \to \eta\pi^+\pi^-$
74±20		[3] AKHMETSHIN	00D	CMD2	$e^+e^- \to \eta\pi^+\pi^-$
91±19		ANTONELLI	88	DM2	$e^+e^- \to \eta\pi^+\pi^-$

[1] Mass and width of the $\rho(770)$ fixed at 775 and 149 MeV, respectively; solution 2 of model 2, $\eta \to \gamma\gamma$ decays used. NODE=M105G4;LINKAGE=B
[2] Includes non-resonant contribution. The selected fit model includes three ρ excited states. Model uncertainty is 20%. NODE=M105G4;LINKAGE=A
[3] Using the data of ANTONELLI 88, DOLINSKY 91, and AKHMETSHIN 00D. The energy-independent width of the $\rho(1450)$ and $\rho(1700)$ mesons assumed. NODE=M105G4;LINKAGE=KL

$\Gamma(K\overline{K}^*(892)+\text{c.c.}) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_{15}\Gamma_{10}/\Gamma$

NODE=M105G8
NODE=M105G8

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
127±15±6	AUBERT	08S	BABR	10.6 $e^+e^- \to K\overline{K}^*(892)\gamma$

$\Gamma(\eta\gamma) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{17}\Gamma_{10}/\Gamma$

NODE=M105G6

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
<16.4	[1] AKHMETSHIN 05	CMD2	0.60-1.38 $e^+e^- \to \eta\gamma$
2.2±0.5±0.3	[2] AKHMETSHIN 01B	CMD2	$e^+e^- \to \eta\gamma$

[1] From 2γ decay mode of η using 1465 MeV and 310 MeV for the $\rho(1450)$ mass and width. Recalculated by us.

NODE=M105G6;LINKAGE=AK

[2] Using the data of AKHMETSHIN 01B on $e^+e^- \to \eta\gamma$, AKHMETSHIN 00D and ANTONELLI 88 on $e^+e^- \to \eta\pi^+\pi^-$. Recalculated by us using width of 226 MeV.

NODE=M105G;LINKAGE=SW

$\rho(1450)$ Γ(i)/Γ(total) × Γ(e^+e^-)/Γ(total)

NODE=M105230

$\Gamma(\omega\pi)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_4/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R05

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.1±0.4	10.2k	[1] ACHASOV	16D	SND	1.05–2.00 $e^+e^- \to \pi^0\pi^0\gamma$
5.3±0.4	7815	[2] ACHASOV	13	SND	1.05–2.00 $e^+e^- \to \pi^0\pi^0\gamma$

OCCUR=3

[1] From a phenomenological model based on vector meson dominance with interfering $\rho(770)$, $\rho(1450)$, and $\rho(1700)$. The $\rho(1700)$ mass and width are fixed at 1720 MeV and 250 MeV, respectively. Systematic uncertainties not estimated. Supersedes ACHASOV 13.

NODE=M105R05;LINKAGE=A

[2] From a phenomenological model based on vector meson dominance with the interfering $\rho(1450)$ and $\rho(1700)$ and their widths fixed at 400 and 250 MeV, respectively. Systematic uncertainty not estimated.

NODE=M105R05;LINKAGE=AC

$\Gamma(\eta\rho)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{11}/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R00

VALUE (units 10^{-7})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
7.3±0.3	7.4k	[1] ACHASOV	18	SND	1.22–2.00 $e^+e^- \to \eta\pi^+\pi^-$
$4.3^{+1.1}_{-0.9}\pm0.2$	4.9k	[2] AULCHENKO	15	SND	1.22–2.00 $e^+e^- \to \eta\pi^+\pi^-$

[1] From the combined fit of AULCHENKO 15 and ACHASOV 18 in the model with the interfering $\rho(1450)$, $\rho(1700)$ and $\rho(2150)$ with the parameters of the $\rho(1450)$ and $\rho(1700)$ floating and the mass and width of the $\rho(2150)$ fixed at 2155 MeV and 320 MeV, respectively. The phases of the resonances are π, 0 and π, respectively.

NODE=M105R00;LINKAGE=B

[2] From a fit to the $e^+e^- \to \eta\pi^+\pi^-$ cross section with vector meson dominance model including $\rho(770)$, $\rho(1450)$, and $\rho(1700)$ decaying exclusively via $\eta\rho(770)$. Masses and widths of vector states are fixed to PDG 14. Coupling constants are assumed to be real.

NODE=M105R00;LINKAGE=A

$\Gamma(\pi^0\gamma)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{16}/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R17

VALUE (units 10^{-9})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.3±1.4	[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 $\rho(1700)$. Systematic errors not evaluated.

NODE=M105R17;LINKAGE=A

$\Gamma(f_0(500)\gamma)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{18}/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R01

VALUE (units 10^{-9})	CL%	DOCUMENT ID		TECN	COMMENT
<4.0	90	ACHASOV	11	SND	$e^+e^- \to \pi^0\pi^0\gamma$

$\Gamma(f_0(980)\gamma)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{19}/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R02

VALUE (units 10^{-9})	CL%	DOCUMENT ID		TECN	COMMENT
<2.6	90	ACHASOV	11	SND	$e^+e^- \to \pi^0\pi^0\gamma$

$\Gamma(f_0(1370)\gamma)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{20}/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R03

VALUE (units 10^{-9})	CL%	DOCUMENT ID		TECN	COMMENT
<3.5	90	ACHASOV	11	SND	$e^+e^- \to \pi^0\pi^0\gamma$

$\Gamma(f_2(1270)\gamma)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{21}/\Gamma \times \Gamma_{10}/\Gamma$

NODE=M105R04

VALUE (units 10^{-9})	CL%	DOCUMENT ID		TECN	COMMENT
<0.8	90	[1] ACHASOV	11	SND	$e^+e^- \to \pi^0\pi^0\gamma$

[1] Using Breit-Wigner parametrization of the $\rho(1450)$ with mass and width of 1465 MeV and 400 MeV, respectively.

NODE=M105R01;LINKAGE=AC

$\rho(1450)$ BRANCHING RATIOS

NODE=M105225

$\Gamma(\pi\pi)/\Gamma(4\pi)$ Γ_1/Γ_3

NODE=M105R15

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.37 ± 0.10	[1,2] ABELE 01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

[1] $\omega\pi$ not included.
[2] Using ABELE 97.

NODE=M105R;LINKAGE=BL
NODE=M105R;LINKAGE=LK

$\Gamma(K^+K^-)/\Gamma(\pi^+\pi^-)$ Γ_{14}/Γ_2

NODE=M105R08

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
30.7±8.4±8.2	20k	[1] LEES 17C	BABR	$J/\psi \rightarrow h^+h^-\pi^0$

[1] From Dalitz plot analyses in isobar models.

NODE=M105R08;LINKAGE=A

$\Gamma(\omega\pi)/\Gamma_{total}$ Γ_4/Γ

NODE=M105R5

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
seen	821	[1] MATVIENKO 15	BELL	$\overline{B}^0 \rightarrow D^{*+}\omega\pi^-$
seen	1.6k	ACHASOV 12	SND	$e^+e^- \rightarrow \pi^0\pi^0\gamma$
~ 0.21		CLEGG 94	RVUE	

[1] Using Breit-Wigner parameterization of the $\rho(1450)$ and assuming equal probabilities of the $\rho(1450) \rightarrow \pi\pi$ and $\rho(1450) \rightarrow \omega\pi$ decays.

NODE=M105R5;LINKAGE=A

$\Gamma(\pi\pi)/\Gamma(\omega\pi)$ Γ_1/Γ_4

NODE=M105R6

VALUE	DOCUMENT ID	TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •		
~ 0.32	CLEGG 94	RVUE

$\Gamma(\omega\pi)/\Gamma(4\pi)$ Γ_4/Γ_3

NODE=M105R3

VALUE	DOCUMENT ID	TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •		
<0.14	CLEGG 88	RVUE

$\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$ Γ_5/Γ_3

NODE=M105R10

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.27 ± 0.08	[1] ABELE 01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

[1] $\omega\pi$ not included.

NODE=M105R10;LINKAGE=BL

$\Gamma(h_1(1170)\pi)/\Gamma(4\pi)$ Γ_6/Γ_3

NODE=M105R11

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.08 ± 0.04	[1] ABELE 01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

[1] $\omega\pi$ not included.

NODE=M105R11;LINKAGE=BL

$\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$ Γ_7/Γ_3

NODE=M105R12

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.37 ± 0.13	[1] ABELE 01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

[1] $\omega\pi$ not included.

NODE=M105R12;LINKAGE=BL

$\Gamma(\rho\rho)/\Gamma(4\pi)$ Γ_8/Γ_3

NODE=M105R13

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.11 ± 0.05	[1] ABELE 01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

[1] $\omega\pi$ not included.

NODE=M105R13;LINKAGE=BL

$\Gamma(\rho(\pi\pi)_{S\text{-wave}})/\Gamma(4\pi)$ Γ_9/Γ_3

NODE=M105R14

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.17 ± 0.09	[1] ABELE 01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

[1] $\omega\pi$ not included.

NODE=M105R14;LINKAGE=BL

$\Gamma(\eta\rho)/\Gamma_{total}$ Γ_{11}/Γ

NODE=M105R2
NODE=M105R2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	35	[1] ACHASOV	14	SND	1.15–2.00 $e^+e^- \rightarrow \eta\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.04		DONNACHIE	87B	RVUE	

[1] From a phenomenological model based on vector meson dominance with $\rho(1450)$ and $\phi(1680)$ masses and widths from the PDG 12.

NODE=M105R2;LINKAGE=A

$\Gamma(\eta\rho)/\Gamma(\omega\pi)$ Γ_{11}/Γ_4

NODE=M105R4
NODE=M105R4

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.081±0.020	[1,2] AULCHENKO	15	SND	1.22–2.00 $e^+e^- \rightarrow \eta\pi^+\pi^-$
∼ 0.24	[3] DONNACHIE	91	RVUE	
>2	FUKUI	91	SPEC	8.95 $\pi^- p \rightarrow \omega\pi^0 n$

[1] From a fit to the $e^+e^- \rightarrow \eta\pi^+\pi^-$ cross section with vector meson dominance model including $\rho(770)$, $\rho(1450)$, and $\rho(1700)$ decaying exclusively via $\eta\rho(770)$. Masses and widths of vector states are fixed to PDG 14. Coupling constants are assumed to be real.

NODE=M105R4;LINKAGE=A

[2] Reports the inverse of the quoted value as 12.3 ± 3.1.

NODE=M105R4;LINKAGE=B

[3] Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L.

NODE=M105R;LINKAGE=A

$\Gamma(\pi\pi)/\Gamma(\eta\rho)$ Γ_1/Γ_{11}

NODE=M105R07
NODE=M105R07

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.3±0.4	[1] AULCHENKO	15	SND	1.22–2.00 $e^+e^- \rightarrow \eta\pi^+\pi^-$

[1] From a fit to the $e^+e^- \rightarrow \eta\pi^+\pi^-$ cross section with vector meson dominance model including $\rho(770)$, $\rho(1450)$, and $\rho(1700)$ decaying exclusively via $\eta\rho(770)$. Masses and widths of vector states are fixed to PDG 14. Coupling constants are assumed to be real.

NODE=M105R07;LINKAGE=A

$\Gamma(a_2(1320)\pi)/\Gamma_{total}$ Γ_{12}/Γ

NODE=M105R9
NODE=M105R9

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	AMELIN	00	VES	37 $\pi^- p \rightarrow \eta\pi^+\pi^- n$

$\Gamma(K\overline{K})/\Gamma(\omega\pi)$ Γ_{13}/Γ_4

NODE=M105R8
NODE=M105R8

VALUE	DOCUMENT ID		TECN
• • • We do not use the following data for averages, fits, limits, etc. • • •			
<0.08	[1] DONNACHIE	91	RVUE

[1] Using data from BISELLO 91B, DOLINSKY 86 and ALBRECHT 87L.

NODE=M105R8;LINKAGE=A

$\Gamma(K\overline{K}^*(892)+c.c.)/\Gamma_{total}$ Γ_{15}/Γ

NODE=M105R16
NODE=M105R16

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
possibly seen	COAN	04	CLEO	$\tau^- \rightarrow K^-\pi^-K^+\nu_\tau$

$\Gamma(\eta\gamma)/\Gamma_{total}$ Γ_{17}/Γ

NODE=M105R06
NODE=M105R06

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	35	[1] ACHASOV	14	SND	1.15–2.00 $e^+e^- \rightarrow \eta\gamma$

[1] From a phenomenological model based on vector meson dominance with $\rho(1450)$ and $\phi(1680)$ masses and widths from the PDG 12.

NODE=M105R06;LINKAGE=A

$\rho(1450)$ REFERENCES

NODE=M105

IGNATOV	24	PR D109 112002	F.V. Ignatov *et al.*	(CMD-3 Collab.)	REFID=62672
GRIBANOV	20	JHEP 2001 112	S.S. Gribanov *et al.*	(CMD-3 Collab.)	REFID=60620
ACHASOV	18	PR D97 012008	M.N. Achasov *et al.*	(SND Collab.)	REFID=58785
LEES	18	PR D97 052007	J.P. Lees *et al.*	(BABAR Collab.)	REFID=58900
BARTOS	17	PR D96 113004	E. Bartos *et al.*		REFID=58325
BARTOS	17A	IJMP A32 1750154	E. Bartos *et al.*		REFID=58367
LEES	17C	PR D95 072007	J.P. Lees *et al.*	(BABAR Collab.)	REFID=57981
AAIJ	16N	PR D93 052018	R. Aaij *et al.*	(LHCb Collab.)	REFID=57273
ABLIKIM	16C	PL B753 629	M. Ablikim *et al.*	(BESIII Collab.)	REFID=57138
ACHASOV	16D	PR D94 112001	M.N. Achasov *et al.*	(SND Collab.)	REFID=57618
AULCHENKO	15	PR D91 052013	V.M. Aulchenko *et al.*	(SND Collab.)	REFID=56793
MATVIENKO	15	PR D92 012013	D. Matvienko *et al.*	(BELLE Collab.)	REFID=56601
ACHASOV	14	PR D90 032002	M.N. Achasov *et al.*	(SND Collab.)	REFID=55912
PDG	14	CP C38 070001	K. Olive *et al.*	(PDG Collab.)	REFID=55687
ACHASOV	13	PR D88 054013	M.N. Achasov *et al.*	(SND Collab.)	REFID=55584
ABRAMOWICZ	12	EPJ C72 1869	H. Abramowicz *et al.*	(ZEUS Collab.)	REFID=54274
ACHASOV	12	JETPL 94 734 Translated from ZETFP 94 796.	M.N. Achasov *et al.*		REFID=54275

LEES	12G	PR D86 032013	J.P. Lees *et al.*	(BABAR Collab.)	REFID=54299
PDG	12	PR D86 010001	J. Beringer *et al.*	(PDG Collab.)	REFID=54066
ACHASOV	11	JETP 113 75	M.N. Achasov *et al.*	(SND Collab.)	REFID=16721
		Translated from ZETF 140 87.			
AMBROSINO	11A	PL B700 102	F. Ambrosino *et al.*	(KLOE Collab.)	REFID=16683
ACHASOV	10D	PR D98 112001	M.N. Achasov *et al.*	(SND Collab.)	REFID=59494
DUBNICKA	10	APS 60 1	S. Dubnicka, A.Z. Dubnickova		REFID=58797
AUBERT	09AS	PRL 103 231801	B. Aubert *et al.*	(BABAR Collab.)	REFID=53136
AUBERT	08S	PR D77 092002	B. Aubert *et al.*	(BABAR Collab.)	REFID=52242
FUJIKAWA	08	PR D78 072006	M. Fujikawa *et al.*	(BELLE Collab.)	REFID=52536
AKHMETSHIN	07	PL B648 28	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=51615
ACHASOV	06	JETP 103 380	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)	REFID=51113
		Translated from ZETF 130 437.			
AKHMETSHIN	05	PL B605 26	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=50330
ALOISIO	05	PL B606 12	A. Aloisio *et al.*	(KLOE Collab.)	REFID=51112
SCHAEL	05C	PRPL 421 191	S. Schael *et al.*	(ALEPH Collab.)	REFID=50845
AKHMETSHIN	04	PL B578 285	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=49609
COAN	04	PRL 92 232001	T.E. Coan *et al.*	(CLEO Collab.)	REFID=49945
AKHMETSHIN	03B	PL B562 173	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=49406
ABELE	01B	EPJ C21 261	A. Abele *et al.*	(Crystal Barrel Collab.)	REFID=48356
AKHMETSHIN	01B	PL B509 217	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=48167
ALEXANDER	01B	PR D64 092001	J.P. Alexander *et al.*	(CLEO Collab.)	REFID=48391
AKHMETSHIN	00D	PL B489 125	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=47935
AMELIN	00	NP A668 83	D. Amelin *et al.*	(VES Collab.)	REFID=47432
ANDERSON	00A	PR D61 112002	S. Anderson *et al.*	(CLEO Collab.)	REFID=47468
EDWARDS	00A	PR D61 072003	K.W. Edwards *et al.*	(CLEO Collab.)	REFID=47465
ABELE	99C	PL B450 275	A. Abele *et al.*	(Crystal Barrel Collab.)	REFID=46916
ABELE	99D	PL B468 178	A. Abele *et al.*	(Crystal Barrel Collab.)	REFID=47401
BERTIN	98	PR D57 55	A. Bertin *et al.*	(OBELIX Collab.)	REFID=45782
ABELE	97	PL B391 191	A. Abele *et al.*	(Crystal Barrel Collab.)	REFID=45415
ACHASOV	97	PR D55 2663	N.N. Achasov *et al.*	(NOVM)	REFID=45382
BARATE	97M	ZPHY C76 15	R. Barate *et al.*	(ALEPH Collab.)	REFID=45622
BERTIN	97C	PL B408 476	A. Bertin *et al.*	(OBELIX Collab.)	REFID=45701
BERTIN	97D	PL B414 220	A. Bertin *et al.*	(OBELIX Collab.)	REFID=45763
CLEGG	94	ZPHY C62 455	A.B. Clegg, A. Donnachie	(LANC, MCHS)	REFID=44081
BISELLO	91B	NPBPS B21 111	D. Bisello	(DM2 Collab.)	REFID=41752
DOLINSKY	91	PRPL 202 99	S.I. Dolinsky *et al.*	(NOVO)	REFID=41369
DONNACHIE	91	ZPHY C51 689	A. Donnachie, A.B. Clegg	(MCHS, LANC)	REFID=41632
FUKUI	91	PL B257 241	S. Fukui *et al.*	(SUGI, NAGO, KEK, KYOT+)	REFID=41581
KUHN	90	ZPHY C48 445	J.H. Kuhn *et al.*	(MPIM)	REFID=45862
ARMSTRONG	89E	PL B228 536	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)	REFID=41011
BISELLO	89	PL B220 321	D. Bisello *et al.*	(DM2 Collab.)	REFID=40740
DUBNICKA	89	JP G15 1349	S. Dubnicka *et al.*	(JINR, SLOV)	REFID=44082
ANTONELLI	88	PL B212 133	A. Antonelli *et al.*	(DM2 Collab.)	REFID=40583
CLEGG	88	ZPHY C40 313	A.B. Clegg, A. Donnachie	(MCHS, LANC)	REFID=40922
DIEKMAN	88	PRPL 159 99	B. Diekmann	(BONN)	REFID=40272
FUKUI	88	PL B202 441	S. Fukui *et al.*	(SUGI, NAGO, KEK, KYOT+)	REFID=40273
ALBRECHT	87L	PL B185 223	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=40418
DONNACHIE	87B	ZPHY C34 257	A. Donnachie, A.B. Clegg	(MCHS, LANC)	REFID=40920
DOLINSKY	86	PL B174 453	S.I. Dolinsky *et al.*	(NOVO)	REFID=20246
BARKOV	85	NP B256 365	L.M. Barkov *et al.*	(NOVO)	REFID=20134
KURDADZE	83	JETPL 37 733	L.M. Kurdadze *et al.*	(NOVO)	REFID=20133
		Translated from ZETFP 37 613.			
ASTON	80C	PL 92B 211	D. Aston	(BONN, CERN, EPOL, GLAS, LANC+)	REFID=20652
BARBER	80C	ZPHY C4 169	D.P. Barber *et al.*	(DARE, LANC, SHEF)	REFID=20653
GOUNARIS	68	PRL 21 244	G.J. Gounaris, J.J. Sakurai		REFID=48054