$\rho(1700)$

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

See the review on "Spectroscopy of Light Meson Resonances."

$\rho(1700)$ MASS

$\eta\rho^0$ AND $\pi^+\pi^-$ MODES

VALUE (MeV)	DOCUMENT ID
1720±20 OUR ESTIMATE	

$\eta\rho^0$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1834±12	13.4k	[1] GRIBANOV	20	CMD3	1.1–2.0 $e^+e^- \to \eta\pi^+\pi^-$
1840±10	7.4k	[2] ACHASOV	18	SND	1.22–2.00 $e^+e^- \to \eta\pi^+\pi^-$
1740±20		ANTONELLI	88	DM2	$e^+e^- \to \eta\pi^+\pi^-$
1701±15		[3] 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.

[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.

[3] Assuming $\rho^+ f_0(1370)$ decay mode interferes with $a_1(1260)^+\pi$ background. From a two Breit-Wigner fit.

$\pi\pi$ MODE

VALUE (MeV)		EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.						
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1770.54± 5.49			[1] BARTOS	17	RVUE	$e^+e^- \to \pi^+\pi^-$
1718.50±65.44			[2] BARTOS	17A	RVUE	$e^+e^- \to \pi^+\pi^-$
1766.80±52.36			[3] BARTOS	17A	RVUE	$\tau^- \to \pi^-\pi^0\nu_\tau$
1644 ±36		20k	[4] LEES	17C	BABR	$J/\psi \to \pi^+\pi^-\pi^0$
1780 ±20	$^{+15}_{-20}$	63.5k	[5] ABRAMOWICZ	12	ZEUS	$e p \to e\pi^+\pi^- p$
1861 ±17			[6] LEES	12G	BABR	$e^+e^- \to \pi^+\pi^-\gamma$
1728 ±17	±89	5.4M	[7,8] FUJIKAWA	08	BELL	$\tau^- \to \pi^-\pi^0\nu_\tau$
1780 $^{+37}_{-29}$			[9] ABELE	97	CBAR	$\overline{p} n \to \pi^-\pi^0\pi^0$
1719 ±15			[9] BERTIN	97C	OBLX	0.0 $\overline{p} p \to \pi^+\pi^-\pi^0$
1730 ±30			CLEGG	94	RVUE	$e^+e^- \to \pi^+\pi^-$
1768 ±21			BISELLO	89	DM2	$e^+e^- \to \pi^+\pi^-$
1745.7 ±91.9			DUBNICKA	89	RVUE	$e^+e^- \to \pi^+\pi^-$
1546 ±26			GESHKEN...	89	RVUE	

1650		[10] ERKAL	85	RVUE	20–70 $\gamma p \to \gamma\pi$
1550	± 70	ABE	84B	HYBR	20 $\gamma p \to \pi^+\pi^- p$
1590	± 20	[11] ASTON	80	OMEG	20–70 $\gamma p \to p 2\pi$
1600	± 10	[12] ATIYA	79B	SPEC	50 $\gamma C \to C 2\pi$
1598	$^{+24}_{-22}$	BECKER	79	ASPK	17 $\pi^- p$ polarized
1659	± 25	[10] LANG	79	RVUE	
1575		[10] MARTIN	78C	RVUE	17 $\pi^- p \to \pi^+\pi^- n$
1610	± 30	[10] FROGGATT	77	RVUE	17 $\pi^- p \to \pi^+\pi^- n$
1590	± 20	[13] HYAMS	73	ASPK	17 $\pi^- p \to \pi^+\pi^- n$

[1] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of LEES 12G and ABLIKIM 16C.

[2] 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.

[3] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of FUJIKAWA 08.

[4] From a Dalitz plot analysis in an isobar model with $\rho(1450)$ and $\rho(1700)$ masses and widths floating.

[5] Using the KUHN 90 parametrization of the pion form factor, neglecting ρ–ω interference.

[6] 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.

[7] $|F_\pi(0)|^2$ fixed to 1.

[8] From the GOUNARIS 68 parametrization of the pion form factor.

[9] T-matrix pole.

[10] From phase shift analysis of HYAMS 73 data.

[11] Simple relativistic Breit-Wigner fit with constant width.

[12] An additional 40 MeV uncertainty in both the mass and width is present due to the choice of the background shape.

[13] Included in BECKER 79 analysis.

$\pi\omega$ MODE

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1723 ± 2		[1] ACHASOV	23A	SND	$e^+e^- \to \omega\pi^0$
1708 ± 41	7815	[2] ACHASOV	13	SND	1.05–2.00 $e^+e^- \to \pi^0\pi^0\gamma$
1550 to 1620		[3] ACHASOV	00I	SND	$e^+e^- \to \pi^0\pi^0\gamma$
1580 to 1710		[4] ACHASOV	00I	SND	$e^+e^- \to \pi^0\pi^0\gamma$
1710 ± 90		ACHASOV	97	RVUE	$e^+e^- \to \omega\pi^0$

[1] From a vector dominance fit to the Born cross section between 1.05 and 2.0 GeV with $\rho(770)$, $\rho(1570)$, $\rho(1700)$, $\rho(2150)$. The fit also uses SND data from the VEPP-2M collider below 1.02 GeV and from LEES 17H and ABLIKIM 21A above 1.5GeV.

[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.

[3] Taking into account both $\rho(1450)$ and $\rho(1700)$ contributions. Using the data of ACHASOV 00I on $e^+e^- \to \omega\pi^0$ and of EDWARDS 00A on $\tau^- \to \omega\pi^-\nu_\tau$. $\rho(1450)$ mass and width fixed at 1400 MeV and 500 MeV respectively.

[4] Taking into account the $\rho(1700)$ contribution only. Using the data of ACHASOV 00I on $e^+e^- \to \omega\pi^0$ and of EDWARDS 00A on $\tau^- \to \omega\pi^-\nu_\tau$.

$K\overline{K}$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$1688.7\pm 3.1^{+141.1}_{-1.3}$		[1] ALBRECHT	20	RVUE		0.9 $\overline{p}p \rightarrow K^+K^-\pi^0$
$1541 \pm 12 \pm 33$	190k	[2] AAIJ	16N	LHCB		$D^0 \rightarrow K^0_S K^{\pm}\pi^{\mp}$
1740.8 ± 22.2	27k	[3] ABELE	99D	CBAR	$\pm$	0.0 $\overline{p}p \rightarrow K^+K^-\pi^0$
1582 ± 36	1600	CLELAND	82B	SPEC	$\pm$	50 $\pi p \rightarrow K^0_S K^{\pm} p$

[1] T-matrix pole, 2 poles, 3 channels, including $\pi\pi$ scattering data from HYAMS 75.
[2] Using the GOUNARIS 68 parameterization with a fixed width. Value is average using different $K\pi$ S-wave parametrizations in fit.
[3] K-matrix pole. Isospin not determined, could be $\omega(1650)$ or $\phi(1680)$.

$2(\pi^+\pi^-)$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1851^{+27}_{-24}		ACHASOV	97	RVUE	$e^+e^- \rightarrow 2(\pi^+\pi^-)$
1570 ± 20		[1] CORDIER	82	DM1	$e^+e^- \rightarrow 2(\pi^+\pi^-)$
1520 ± 30		[2] ASTON	81E	OMEG	20–70 $\gamma p \rightarrow p4\pi$
1654 ± 25		[3] DIBIANCA	81	DBC	$\pi^+ d \rightarrow pp2(\pi^+\pi^-)$
1666 ± 39		[1] BACCI	80	FRAG	$e^+e^- \rightarrow 2(\pi^+\pi^-)$
1780	34	KILLIAN	80	SPEC	11 $e^- p \rightarrow 2(\pi^+\pi^-)$
1500		[4] ATIYA	79B	SPEC	50 $\gamma C \rightarrow C4\pi^{\pm}$
1570 ± 60	65	[5] ALEXANDER	75	HBC	7.5 $\gamma p \rightarrow p4\pi$
1550 ± 60		[2] CONVERSI	74	OSPK	$e^+e^- \rightarrow 2(\pi^+\pi^-)$
1550 ± 50	160	SCHACHT	74	STRC	5.5–9 $\gamma p \rightarrow p4\pi$
1450 ± 100	340	SCHACHT	74	STRC	9–18 $\gamma p \rightarrow p4\pi$
1430 ± 50	400	BINGHAM	72B	HBC	9.3 $\gamma p \rightarrow p4\pi$

[1] Simple relativistic Breit-Wigner fit with model dependent width.
[2] Simple relativistic Breit-Wigner fit with constant width.
[3] One peak fit result.
[4] Parameters roughly estimated, not from a fit.
[5] Skew mass distribution compensated by Ross-Stodolsky factor.

$\pi^+\pi^-\pi^0\pi^0$ MODE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1660 ± 30	ATKINSON	85B	OMEG	20–70 γp

$3(\pi^+\pi^-)$ AND $2(\pi^+\pi^-\pi^0)$ MODES

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1730 ± 34	[1] FRABETTI	04	E687	$\gamma p \rightarrow 3\pi^+3\pi^- p$
1783 ± 15	CLEGG	90	RVUE	$e^+e^- \rightarrow 3(\pi^+\pi^-)2(\pi^+\pi^-\pi^0)$

[1] From a fit with two resonances with the JACOB 72 continuum.

$m_{\rho(1700)^0} - m_{\rho(1700)^\pm}$

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-48.30 ± 83.81	[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.

ρ(1700) WIDTH

$\eta\rho^0$ AND $\pi^+\pi^-$ MODES

VALUE (MeV)	DOCUMENT ID
250±100 OUR ESTIMATE	

$\eta\rho^0$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
47 ± 19	13.4k	[1] GRIBANOV	20	CMD3	1.1–2.0 $e^+e^- \to \eta\pi^+\pi^-$
132 ± 40	7.4k	[2] ACHASOV	18	SND	1.22–2.00 $e^+e^- \to \eta\pi^+\pi^-$
150 ± 30		ANTONELLI	88	DM2	$e^+e^- \to \eta\pi^+\pi^-$
282 ± 44		[3] 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.
[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.
[3] Assuming $\rho^+ f_0(1370)$ decay mode interferes with $a_1(1260)^+\pi$ background. From a two Breit-Wigner fit.

$\pi\pi$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
268.98 ± 11.40		[1] BARTOS	17	RVUE	$e^+e^- \to \pi^+\pi^-$
489.58 ± 16.95		[2] BARTOS	17A	RVUE	$e^+e^- \to \pi^+\pi^-$
414.71 ± 119.48		[3] BARTOS	17A	RVUE	$\tau^- \to \pi^-\pi^0\nu_\tau$
109 ± 19	20k	[4] LEES	17C	BABR	$J/\psi \to \pi^+\pi^-\pi^0$
$310\pm30\,^{+25}_{-35}$	63.5k	[5] ABRAMOWICZ	12	ZEUS	$ep \to e\pi^+\pi^-p$
316 ± 26		[6] LEES	12G	BABR	$e^+e^- \to \pi^+\pi^-\gamma$
$164\pm21\,^{+89}_{-26}$	5.4M	[7,8] FUJIKAWA	08	BELL	$\tau^- \to \pi^-\pi^0\nu_\tau$
275 ± 45		[9] ABELE	97	CBAR	$\overline{p}n \to \pi^-\pi^0\pi^0$
310 ± 40		[9] BERTIN	97C	OBLX	0.0 $\overline{p}p \to \pi^+\pi^-\pi^0$

400	±100	CLEGG	94	RVUE	$e^+ e^- \to \pi^+ \pi^-$
224	± 22	BISELLO	89	DM2	$e^+ e^- \to \pi^+ \pi^-$
242.5	±163.0	DUBNICKA	89	RVUE	$e^+ e^- \to \pi^+ \pi^-$
620	± 60	GESHKEN...	89	RVUE	
<315		[10] ERKAL	85	RVUE	20–70 $\gamma p \to \gamma \pi$
280	$^{+30}_{-80}$	ABE	84B	HYBR	20 $\gamma p \to \pi^+ \pi^- p$
230	± 80	[11] ASTON	80	OMEG	20–70 $\gamma p \to p 2\pi$
283	± 14	[12] ATIYA	79B	SPEC	50 γC $\to$ C2π
175	$^{+98}_{-53}$	BECKER	79	ASPK	17 $\pi^- p$ polarized
232	± 34	[10] LANG	79	RVUE	
340		[10] MARTIN	78C	RVUE	17 $\pi^- p \to \pi^+ \pi^- n$
300	±100	[10] FROGGATT	77	RVUE	17 $\pi^- p \to \pi^+ \pi^- n$
180	± 50	[13] HYAMS	73	ASPK	17 $\pi^- p \to \pi^+ \pi^- n$

[1] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of LEES 12G and ABLIKIM 16C.

[2] 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.

[3] Applies the Unitary & Analytic Model of the pion electromagnetic form factor of DUBNICKA 10 to analyze the data of FUJIKAWA 08.

[4] From a Dalitz plot analysis in an isobar model with $\rho(1450)$ and $\rho(1700)$ masses and widths floating.

[5] Using the KUHN 90 parametrization of the pion form factor, neglecting $\rho-\omega$ interference.

[6] 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.

[7] $|F_\pi(0)|^2$ fixed to 1.

[8] From the GOUNARIS 68 parametrization of the pion form factor.

[9] T-matrix pole.

[10] From phase shift analysis of HYAMS 73 data.

[11] Simple relativistic Breit-Wigner fit with constant width.

[12] An additional 40 MeV uncertainty in both the mass and width is present due to the choice of the background shape.

[13] Included in BECKER 79 analysis.

$K\overline{K}$ MODE

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
150.9± 2.5$^{+60}_{-10.6}$		[1] ALBRECHT	20	RVUE		0.9 $\overline{p} p \to K^+ K^- \pi^0$
187.2± 26.7	27k	[2] ABELE	99D	CBAR	±	0.0 $\overline{p} p \to K^+ K^- \pi^0$
265 ±120	1600	CLELAND	82B	SPEC	±	50 $\pi p \to K^0_S K^\pm p$

[1] T-matrix pole, 2 poles, 3 channels, including $\pi\pi$ scattering data from HYAMS 75.

[2] K-matrix pole. Isospin not determined, could be $\omega(1650)$ or $\phi(1680)$.

2 $(\pi^+\pi^-)$ MODE

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
510±40		[1] CORDIER	82	DM1	$e^+e^- \to 2(\pi^+\pi^-)$
400±50		[2] ASTON	81E	OMEG	20–70 $\gamma p \to p4\pi$
400±146		[3] DIBIANCA	81	DBC	$\pi^+ d \to pp2(\pi^+\pi^-)$
700±160		[1] BACCI	80	FRAG	$e^+e^- \to 2(\pi^+\pi^-)$
100	34	KILLIAN	80	SPEC	11 $e^- p \to 2(\pi^+\pi^-)$
600		[4] ATIYA	79B	SPEC	50 $\gamma C \to C4\pi^\pm$
340±160	65	[5] ALEXANDER	75	HBC	7.5 $\gamma p \to p4\pi$
360±100		[2] CONVERSI	74	OSPK	$e^+e^- \to 2(\pi^+\pi^-)$
400±120	160	[6] SCHACHT	74	STRC	5.5–9 $\gamma p \to p4\pi$
850±200	340	[6] SCHACHT	74	STRC	9–18 $\gamma p \to p4\pi$
650±100	400	BINGHAM	72B	HBC	9.3 $\gamma p \to p4\pi$

[1] Simple relativistic Breit-Wigner fit with model-dependent width.
[2] Simple relativistic Breit-Wigner fit with constant width.
[3] One peak fit result.
[4] Parameters roughly estimated, not from a fit.
[5] Skew mass distribution compensated by Ross-Stodolsky factor.
[6] Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass.

$\pi^+\pi^-\pi^0\pi^0$ MODE

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
300±50	ATKINSON	85B	OMEG	20–70 γp

$\omega\pi^0$ MODE

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
371±3	[1] ACHASOV	23A	SND	$e^+e^- \to \omega\pi^0$
350 to 580	[2] ACHASOV	00I	SND	$e^+e^- \to \pi^0\pi^0\gamma$
490 to 1040	[3] ACHASOV	00I	SND	$e^+e^- \to \pi^0\pi^0\gamma$

[1] From a vector dominance fit to the Born cross section between 1.05 and 2.0 GeV with $\rho(770)$, $\rho(1570)$, $\rho(1700)$, $\rho(2150)$. The fit also uses SND data from the VEPP-2M collider below 1.02 GeV and from LEES 17H and ABLIKIM 21A above 1.5 GeV.
[2] Taking into account both $\rho(1450)$ and $\rho(1700)$ contributions. Using the data of ACHASOV 00I on $e^+e^- \to \omega\pi^0$ and of EDWARDS 00A on $\tau^- \to \omega\pi^-\nu_\tau$. $\rho(1450)$ mass and width fixed at 1400 MeV and 500 MeV respectively.
[3] Taking into account the $\rho(1700)$ contribution only. Using the data of ACHASOV 00I on $e^+e^- \to \omega\pi^0$ and of EDWARDS 00A on $\tau^- \to \omega\pi^-\nu_\tau$.

$3(\pi^+\pi^-)$ AND $2(\pi^+\pi^-\pi^0)$ MODES

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
315±100	[1] FRABETTI	04	E687	$\gamma p \to 3\pi^+ 3\pi^- p$
285±20	CLEGG	90	RVUE	$e^+e^- \to 3(\pi^+\pi^-) 2(\pi^+\pi^-\pi^0)$

[1] From a fit with two resonances with the JACOB 72 continuum.

$\Gamma_{\rho(1700)^0} - \Gamma_{\rho(1700)^\pm}$

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
74.87 ± 120.67	[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.

ρ(1700) DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	4π	
Γ_2	$2(\pi^+\pi^-)$	seen
Γ_3	$\rho\pi\pi$	seen
Γ_4	$\rho^0\pi^+\pi^-$	seen
Γ_5	$\rho^0\pi^0\pi^0$	
Γ_6	$\rho^\pm\pi^\mp\pi^0$	seen
Γ_7	$a_1(1260)\pi$	seen
Γ_8	$h_1(1170)\pi$	seen
Γ_9	$\pi(1300)\pi$	seen
Γ_{10}	$\rho\rho$	seen
Γ_{11}	$\pi^+\pi^-$	seen
Γ_{12}	$\pi\pi$	seen
Γ_{13}	$K\overline{K}^*(892)+$ c.c.	seen
Γ_{14}	$\eta\rho$	seen
Γ_{15}	$a_2(1320)\pi$	not seen
Γ_{16}	$K\overline{K}$	seen
Γ_{17}	e^+e^-	seen
Γ_{18}	$\pi^0\omega$	seen
Γ_{19}	$\pi^0\gamma$	not seen
Γ_{20}	$f_0(1500)\gamma$	not seen

ρ(1700) $\Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$

This combination of a partial width with the partial width into e^+e^- and with the total width is obtained from the cross-section into channel$_I$ in e^+e^- annihilation.

$\Gamma(2(\pi^+\pi^-)) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ — $\Gamma_2\Gamma_{17}/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.6 ± 0.2	DELCOURT	81B	DM1	$e^+e^- \to 2(\pi^+\pi^-)$
2.83 ± 0.42	BACCI	80	FRAG	$e^+e^- \to 2(\pi^+\pi^-)$

$\Gamma(\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{11}\Gamma_{17}/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.13	[1] DIEKMAN	88	RVUE	$e^+e^- \to \pi^+\pi^-$
$0.029^{+0.016}_{-0.012}$	KURDADZE	83	OLYA	0.64–1.4 $e^+e^- \to \pi^+\pi^-$

[1] Using total width = 220 MeV.

$\Gamma(K\overline{K}^*(892)+\text{c.c.}) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{13}\Gamma_{17}/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.305 ± 0.071	[1] BIZOT	80	DM1	e^+e^-

[1] Model dependent.

$\Gamma(\eta\rho) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{14}\Gamma_{17}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.35\pm\ 0.53\pm0.08$	13.4k	[1] GRIBANOV	20	CMD3	1.1–2.0 $e^+e^- \to \eta\pi^+\pi^-$
$84\ \pm26\ \pm4$		[2] LEES	18	BABR	$e^+e^- \to \eta\pi^+\pi^-$
$7\ \pm\ 3$		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.

[2] Includes non-resonant contribution. The selected fit model includes three ρ excited states. Model uncertainty is 80%.

$\Gamma(K\overline{K}) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{16}\Gamma_{17}/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.035 ± 0.029	[1] BIZOT	80	DM1	e^+e^-

[1] Model dependent.

$\Gamma(\rho\pi\pi) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{3}\Gamma_{17}/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3.510 ± 0.090	[1] BIZOT	80	DM1	e^+e^-

[1] Model dependent.

$\rho(1700)$ $\Gamma(i)/\Gamma(\text{total}) \times \Gamma(e^+e^-)/\Gamma(\text{total})$

$\Gamma(\pi^0\omega)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_{18}/\Gamma \times \Gamma_{17}/\Gamma$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.09 ± 0.05	10.2k	[1] ACHASOV	16D	SND	1.05–2.00 $e^+e^- \to \pi^0\pi^0\gamma$
$1.7\ \pm0.4$	7815	[2] ACHASOV	13	SND	1.05–2.00 $e^+e^- \to \pi^0\pi^0\gamma$

[1] From a phenomenological model based on vector meson dominance with interfering $\rho(700)$, $\rho(1450)$, and $\rho(1700)$. The $\rho(1700)$ mass and width are fixed at 1720 MeV and 250 MeV, respectively. Systematic uncertainty not estimated. Supersedes ACHASOV 13.
[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.

$\Gamma(\eta\rho)/\Gamma_{total} \times \Gamma(e^+e^-)/\Gamma_{total}$ — $\Gamma_{14}/\Gamma \times \Gamma_{17}/\Gamma$

VALUE (units 10^{-8})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$8.3^{+3.8}_{-3.1}$	7.4k	[1] ACHASOV	18	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.

$\rho(1700)$ BRANCHING RATIOS

$\Gamma(\rho\pi\pi)/\Gamma(4\pi)$ — Γ_3/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.28 ± 0.06	[1] ABELE	01B	CBAR	0.0 $\overline{p}n \to 5\pi$

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

$\Gamma(\rho^0\pi^+\pi^-)/\Gamma(2(\pi^+\pi^-))$ — Γ_4/Γ_2

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
~ 1.0		DELCOURT	81B	DM1	$e^+e^- \to 2(\pi^+\pi^-)$
$0.7\ \pm0.1$	500	SCHACHT	74	STRC	5.5–18 $\gamma p \to p4\pi$
0.80		[1] BINGHAM	72B	HBC	9.3 $\gamma p \to p4\pi$

[1] The $\pi\pi$ system is in S-wave.

$\Gamma(\rho^0\pi^0\pi^0)/\Gamma(\rho^\pm\pi^\mp\pi^0)$ — Γ_5/Γ_6

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.10	ATKINSON	85B	OMEG		20–70 γp
<0.15	ATKINSON	82	OMEG	0	20–70 $\gamma p \to p4\pi$

$\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$ — Γ_7/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.16 ± 0.05	[1] ABELE	01B	CBAR	0.0 $\overline{p}n \to 5\pi$

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

$\Gamma(h_1(1170)\pi)/\Gamma(4\pi)$ — Γ_8/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.17 ± 0.06	[1] ABELE	01B	CBAR	0.0 $\overline{p}n \to 5\pi$

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

$\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$ Γ_9/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.30 ± 0.10	[1] ABELE	01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

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

$\Gamma(\rho\rho)/\Gamma(4\pi)$ Γ_{10}/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.09 ± 0.03	[1] ABELE	01B	CBAR	$0.0\ \overline{p}n \rightarrow 5\pi$

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

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ Γ_{11}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.108\pm0.017^{+0.162}_{-0.004}$	[1] ALBRECHT	20	RVUE	$0.9\ \overline{p}p \rightarrow K^+K^-\pi^0$
$0.287^{+0.043}_{-0.042}$	BECKER	79	ASPK	$17\ \pi^-p$ polarized
0.15 to 0.30	[2] MARTIN	78C	RVUE	$17\ \pi^-p \rightarrow \pi^+\pi^-n$
<0.20	[3] COSTA...	77B	RVUE	$e^+e^- \rightarrow 2\pi, 4\pi$
0.30 ± 0.05	[2] FROGGATT	77	RVUE	$17\ \pi^-p \rightarrow \pi^+\pi^-n$
<0.15	[4] EISENBERG	73	HBC	$5\ \pi^+p \rightarrow \Delta^{++}2\pi$
0.25 ± 0.05	[5] HYAMS	73	ASPK	$17\ \pi^-p \rightarrow \pi^+\pi^-n$

[1] Residue from T-matrix pole, 2 poles, 3 channels, Chew-Mandelstam functions and simplified analytic continuation for the 4π channel. Includes scattering data from HYAMS 75 and model-independent calculation of GARCIA-MARTIN 11A.
[2] From phase shift analysis of HYAMS 73 data.
[3] Estimate using unitarity, time reversal invariance, Breit-Wigner.
[4] Estimated using one-pion-exchange model.
[5] Included in BECKER 79 analysis.

$\Gamma(K\overline{K})/\Gamma_{total}$ Γ_{16}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.007\pm0.006^{+0.041}_{-0.002}$	[1] ALBRECHT	20	RVUE	$0.9\ \overline{p}p \rightarrow K^+K^-\pi^0$

[1] Residue from T-matrix pole, 2 poles, 3 channels, Chew-Mandelstam functions and simplified analytic continuation for the 4π channel. Includes scattering data from HYAMS 75 and model-independent calculation of GARCIA-MARTIN 11A.

$\Gamma(\pi^+\pi^-)/\Gamma(2(\pi^+\pi^-))$ Γ_{11}/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.13 ± 0.05	ASTON	80	OMEG	20–70 $\gamma p \rightarrow p2\pi$
<0.14	[1] DAVIER	73	STRC	6–18 $\gamma p \rightarrow p4\pi$
<0.2	[2] BINGHAM	72B	HBC	9.3 $\gamma p \rightarrow p2\pi$

[1] Upper limit is estimate.
[2] 2σ upper limit.

$\Gamma(\pi\pi)/\Gamma(4\pi)$ — Γ_{12}/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.16 ± 0.04	[1,2] ABELE	01B	CBAR	0.0 $\overline{p}n \to 5\pi$

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

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/\Gamma_{\text{total}}$ — Γ_{13}/Γ

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

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/\Gamma(2(\pi^+\pi^-))$ — Γ_{13}/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.15 ± 0.03	[1] DELCOURT	81B	DM1	$e^+e^- \to \overline{K}K\pi$

[1] Assuming $\rho(1700)$ and ω radial excitations to be degenerate in mass.

$\Gamma(\eta\rho)/\Gamma_{\text{total}}$ — Γ_{14}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
possibly seen		AKHMETSHIN	00D	CMD2	$e^+e^- \to \eta\pi^+\pi^-$
<0.04		DONNACHIE	87B	RVUE	
<0.02	58	ATKINSON	86B	OMEG	20–70 γp

$\Gamma(\eta\rho)/\Gamma(2(\pi^+\pi^-))$ — Γ_{14}/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.123 ± 0.027	DELCOURT	82	DM1	$e^+e^- \to \pi^+\pi^-$ MM
~ 0.1	ASTON	80	OMEG	20–70 γp

$\Gamma(\pi^+\pi^-\text{neutrals})/\Gamma(2(\pi^+\pi^-))$ — $(\Gamma_5+\Gamma_6+0.714\Gamma_{14})/\Gamma_2$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.6 ± 0.4	[1] BALLAM	74	HBC	9.3 γp

[1] Upper limit. Background not subtracted.

$\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$ — Γ_{15}/Γ

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

$\Gamma(K\overline{K})/\Gamma(2(\pi^+\pi^-))$ — Γ_{16}/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.015 ± 0.010		[1] DELCOURT	81B	DM1		$e^+e^- \to \overline{K}K$
<0.04	95	BINGHAM	72B	HBC	0	9.3 γp

[1] Assuming $\rho(1700)$ and ω radial excitations to be degenerate in mass.

$\Gamma(K\overline{K})/\Gamma(K\overline{K}^*(892)+\text{c.c.})$ Γ_{16}/Γ_{13}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.052 ± 0.026	BUON	82	DM1	$e^+e^- \to$ hadrons

$\Gamma(\pi^0\omega)/\Gamma_{\text{total}}$ Γ_{18}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
not seen		MATVIENKO	15	BELL	$\overline{B}^0 \to D^{*+}\omega\pi^-$
seen	1.6k	ACHASOV	12	SND	$e^+e^- \to \pi^0\pi^0\gamma$
not seen	2382	AKHMETSHIN	03B	CMD2	$e^+e \to \pi^0\pi^0\gamma$
seen		ACHASOV	97	RVUE	$e^+e^- \to \omega\pi^0$

$\Gamma(\pi^0\gamma)/\Gamma_{\text{total}}$ Γ_{19}/Γ

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.

$\Gamma(f_0(1500)\gamma)/\Gamma_{\text{total}}$ Γ_{20}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
not seen	[1] ACHASOV	22	SND	1.17–2.00 $e^+e^- \to \eta\eta\gamma$

[1] The 90% CL upper limit on the Born cross sections $\sigma(e^+e^- \to \phi(1680) \to f'_2(1525)\gamma \to \eta\eta\gamma)$ and $\sigma(e^+e^- \to \rho(1700) \to f_0(1500)\gamma \to \eta\eta\gamma)$ is 10.6 pb.

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